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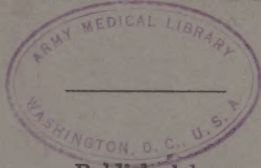
**RULES AND REGULATIONS**  
of the  
**Iowa State Department  
of Health**

Relating to  
**Communicable and Other Reportable  
Diseases**

In Cooperation with the  
**AMERICAN PUBLIC HEALTH ASSOCIATION**  
and the  
**UNITED STATES PUBLIC HEALTH SERVICE**

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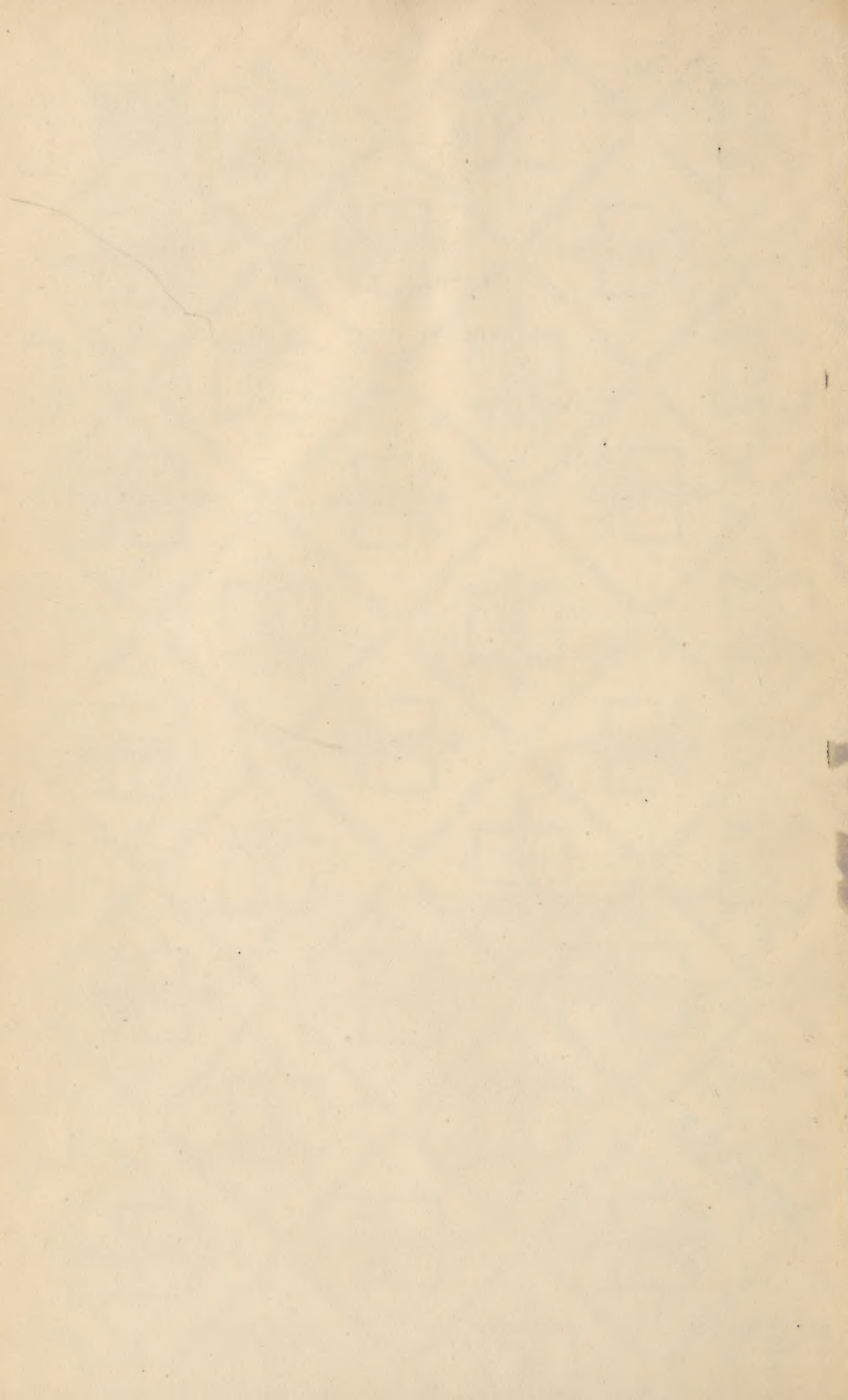
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This Issue Supersedes all Previous Issues

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# IOWA STATE DEPARTMENT OF HEALTH

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Wayne M. Ropes, Secretary of State  
W. G. C. Bagley, Treasurer of State  
Chet B. Akers, Auditor of State  
Harry D. Linn, Secretary of Agriculture  
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A. C. Page, M. D., Des Moines  
Frank P. McNamara, M. D., Dubuque  
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## OFFICES

1027 Des Moines Street, one block North of State House

The Barber and Cosmetology Divisions, State House

Medical Laboratories Bldg., State University of Iowa, Iowa City

430982





## OFFICIAL NOTICE

This revision of Rules and Regulations includes a new section, containing material prepared by the Sub-committee on Communicable Disease Control of the Committee on Research and Standards of the American Public Health Association. The new section (Section XV, replacing Section XX of previous editions) represents a bulletin entitled "The Control of Communicable Diseases," approved and recommended by the American Public Health Association and by the United States Public Health Service.

Grateful acknowledgement is made to the American Public Health Association for permission to reprint the abovementioned bulletin in Rules and Regulations of the Iowa State Department of Health.

The Rules and Regulations relating to communicable and other reportable diseases, revised and adopted by the Iowa State Department of Health, have been prepared and promulgated in accordance with the provisions of Code of 1924, Section 2191, which statute gives to the State Department of Health supervision of the interests of the public health of the citizens of the state, and confers upon said Department authority to make such rules and regulations and sanitary investigations as may from time to time be necessary for the preservation and improvement of the public health. The statute provides also that the rules and regulations made by the Department shall be enforced by local Boards of Health and peace officers of the state.

## CERTIFICATION

It is hereby certified to all County Auditors, to district, county and local Boards of Health that the Rules and Regulations contained herein were adopted by the Iowa State Department of Health, July 14, 1942, and that the same will become effective August 1, 1943.

WALTER L. BIERRING, M. D.,  
Commissioner of Health.

(Seal)

Dated at Des Moines this 14th day of July, 1943.





# **Rules and Regulations of Iowa State Department of Health Relating to Communicable and Other Reportable Diseases**

**Revised and Adopted July 14, 1942**

**Effective August 1, 1943**

## **SEC. I. STATE DEPARTMENT OF HEALTH.**

**Powers and Duties.** The Commissioner of Public Health shall be the head of the "State Department of Health", which shall:

1. Exercise general supervision over the public health, promote public hygiene and sanitation, and, unless otherwise provided, enforce the laws relating to the same.
2. Conduct campaigns for the education of the people in hygiene and sanitation.
3. Issue monthly health bulletins containing fundamental health principles and other health data deemed of public interest.
4. Make investigations and surveys in respect to the causes of disease and epidemics, and the effect of locality, employment, and living conditions upon the public health. For this purpose the department may use the services of the experts connected with the bacteriological and epidemiological laboratory at the state university.
5. Make inspections of the sanitary conditions in the educational, charitable, correctional, and penal institutions in the state.
6. Make inspections of the sanitary conditions in any locality of the state upon written petition of five or more citizens from said locality, and issue directions for the improvement of the same, which shall be executed by the local board.
7. Make inspections of the public water supplies, sewer systems, sewage treatment plants, and garbage and refuse disposal plants throughout the state, and direct the method of installation and operation of the same.
8. Establish, publish, and enforce a code of rules governing the installation of plumbing in cities and towns and amend the same when deemed necessary in the manner prescribed in the following section. Said rules and amendments shall be published in the same manner as other rules of the department.
9. Exercise general supervision over the administration of the housing law and give aid to the local authorities in the enforcement of the same, and it shall institute in the name of the state such legal proceedings as may be necessary in the enforcement of said law.

10. Hear and determine all appeals from the order of any local board made in connection with the enforcement of the housing law, and enforce its orders therein.
11. Establish stations throughout the state for the distribution of antitoxins and vaccines to physicians, druggists and other persons, at cost. All antitoxins and vaccine thus distributed shall be labeled "Iowa State Department of Health."
12. Exercise general supervision over the administration and enforcement of the venereal disease law, chapter 109.
13. Exercise sole jurisdiction over the disposal and transportation of the dead bodies of human beings and prescribe the methods to be used in preparing such bodies for disposal and transportation.
14. Exercise general supervision over the administration and enforcement of the vital statistics law, chapter 114.
15. Enforce the law relative to the "Practice of Certain Professions Affecting the Public Health," title 8.
16. Establish and maintain such divisions in the departments as are necessary for the proper enforcement of the laws administered by it, including a division of contagious and infectious diseases, a division of venereal diseases, a division of housing, a division of sanitary engineering, a division of vital statistics, and a division of examinations and licenses; but the various services of the department shall be so consolidated as to eliminate unnecessary personnel and make possible the carrying on of the functions of the department under the most economical methods.
17. Establish, publish, and enforce rules not inconsistent with law for the enforcement of the provisions of this title and for the enforcement of the various laws, the administration and supervision of which are imposed upon the department.

## SEC. II. STATE BOARD OF HEALTH.

**Composition of Board of Health.** The State Board of Health shall consist of:

1. The Commissioner of Public Health
2. The Members of the Executive Council
3. Five Health Officers to be appointed by the Governor

**Appointment of Members.** The governor shall appoint, prior to the second Tuesday in January, 1925, and every two years thereafter, the five health officers provided for in the preceding section, who shall serve for a period of two years or until their successors are appointed and qualify. Not more than one of such Health Officers shall be appointed from any one congressional district.

**Duties of Board of Health.** The State Board of Health shall be an advisory body to the State Department of Health.

## SEC. III. LOCAL BOARD OF HEALTH.

1. **Organization.** The local board of health shall consist:
  - a. In cities and towns, of the mayor, health physician and members of the city or town council.
  - b. In townships or counties, of members of the board of township trustees or of the county board of health.

2. **Minimum Requirements.** It is hereby declared by the Iowa State Department of Health that these rules and regulations are to be the MINIMUM REQUIREMENTS for the safeguarding of the public health within this state. Health officials have no discretionary powers to lessen these requirements but may increase them to fit attendant circumstances.
3. **Power to Make Additional Rules.** Local Boards of Health are authorized and empowered by law to make such additions, provided they are not in conflict with these rules and regulations and are not contrary to the best public health practice.
4. **Reports Required.** Every physician and the parents, guardian, school teacher or householder where a case of communicable or reportable disease exists, should report the case. (For method of reporting, see Section VII)
5. **Health Officer to Examine.** The local Boards of Health upon receiving a report of a communicable disease from a person who is not a licensed physician should give an order to the Local Health Officer to visit and examine the case reported. The Health Officer should examine the person suspected of having the disease and make a report to the local Board of Health with his recommendations.
6. **Investigation of Reports.** Whenever it is reported that a suspected case of reportable disease exists or that a person has reason to believe that a case exists, the Local Board of Health shall have the report investigated by its Health Officer and adequate means should be provided for the protection of the public.
7. **General Duties of Health Officer.** Section 2236, Code of 1931. The Health Officer shall be the executive officer of the Local Board in all matters pertaining to the public health, the control of communicable diseases, disposal of refuse and night soil, and the pollution of wells and other sources of water supply. He shall recommend to the Local Board the proper measures to be taken for the abatement of unhealthful conditions and for the preservation of the public health. He shall give attention to reports of cases of reportable diseases, impose and terminate isolation. He shall keep a record of cases reported to him (name, age, sex, address, birthplace, occupation, school or place of employment of the person reported to be ill, the name of the person making the report, the date of receipt by him of the report, the date of transmission of the report to the State Department of Health, the date of isolation, the date of release from isolation, the termination of the case and source of infection if known) in a book kept for the purpose. He shall forward reports of cases to the District Health Office in accordance with rules and regulations of the State Department of Health.

#### SEC. IV. PENALTY AND ENFORCEMENT.

1. **Penalty for Violation.** Sections 2246 and 2279 of the State Code of 1924 provide that anyone who neglects or refuses to comply with and obey any order, rule and regulation of the Local or State Department of Health shall be guilty of a misdemeanor.



2. **Rules Enforced.** Sections 2234 and 2244 of the State Code of 1924 provide that Local Boards of Health shall OBEY and ENFORCE the rules and regulations of the State Department of Health. Peace officials and police officers within their respective jurisdiction when called upon to do so by local boards, shall execute the orders of such board.

## SEC. V. COMMUNICABLE DISEASES.

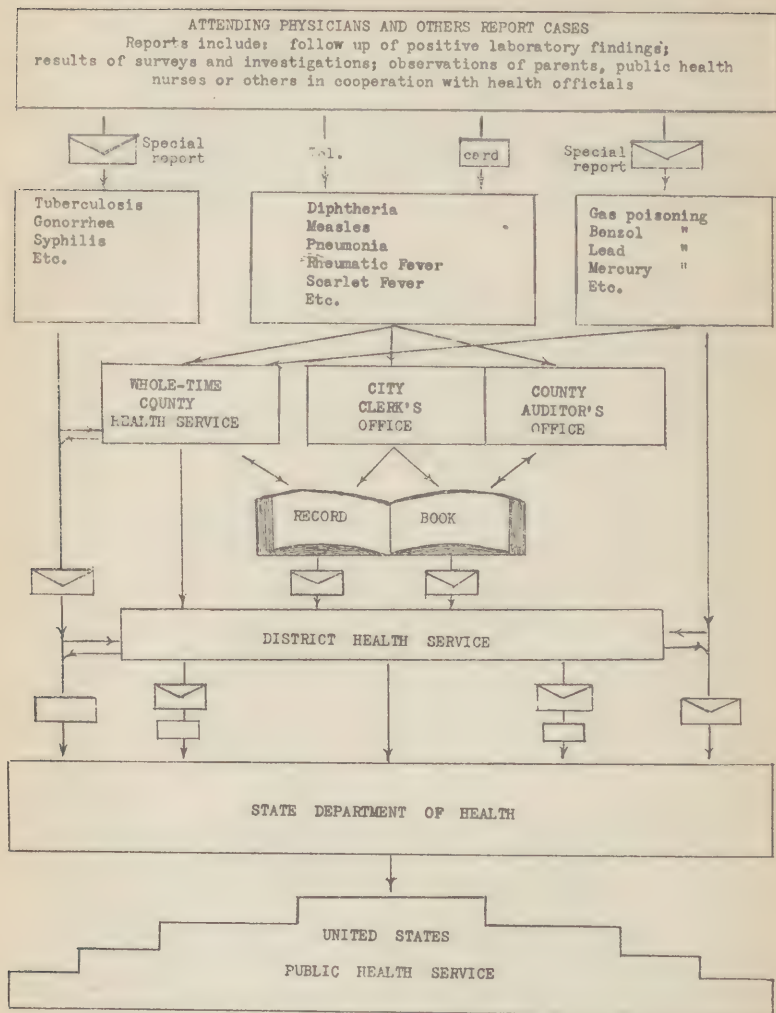
- A. **List of Reportable Diseases.** (See Section XV, pp. 20, 21, 82, 99)
1. **Acute Rheumatic Fever.** This disease, although not included among the communicable diseases hereinafter considered, is reportable in Iowa.

## SEC. VI. OCCUPATIONAL OR INDUSTRIAL DISEASES.

- A. **Definition.** An occupational or industrial disease is any affliction which results from exposure to a harmful substance or condition in industry.
- B. **Harmful Substances.** The harmful substances which make an industrial health hazard are classified as follows:
  1. Dusts
  2. Gases, vapors, fumes, mists
  3. Solids and liquids
  4. Infective materials
- C. **Harmful Conditions.** The harmful conditions which make an industrial health hazard are classified as follows:
  1. Excessive heat, cold, or moisture
  2. Excessive light
  3. Compressed air
  4. Confined air
  5. Confined positions (nerve and muscle strain and fatigue; the "occupational neuroses")
  6. Eye and ear strain
  7. Irritation of the skin
- D. **List of Reportable Diseases.** The following occupational or industrial diseases are declared to be reportable:
  1. Silicosis
  2. Silicatosis
  3. Poisoning by phosphorus or its compounds
  4. Poisoning by cyanide or any of its compounds
  5. Carbon monoxide poisoning
  6. Poisoning by chlorine, ammonia, sulphur dioxide or any irritating gas
  7. Poisoning by hydrogen sulphide or any other sulphide
  8. Poisoning by benzol or nitro-, hydro-, hydroxy-, and amido-derivatives of benzene (dinitro-benzol, anilin, and others)
  9. Poisoning by formaldehyde or its preparations
  10. Poisoning from methyl chloride, carbon tetrachloride or any organic halide or solvent
  11. Poisoning from volatile petroleum products (gasoline, benzine, naphtha, etc.)
  12. Poisoning by wood alcohol
  13. Chrome ulceration (nasal and skin)
  14. Poisoning by sulphuric, hydrochloric or any other acid
  15. Poisoning by nitrous fumes
  16. Epithelioma (skin or eye) due to pitch, tar, bitumen, mineral oil, or paraffin, or any compound, product, or residue of any of these substances
  17. Poisoning from lead, zinc or brass, cadmium, mercury, arsenic, manganese or any of their compounds

18. Radium poisoning or disability due to radioactive properties of substances or Roentgen rays (X-rays)
19. Metal fume fever (zinc fume fever, brass founders ague, brass chills)
20. Conjunctivitis and retinitis due to electro- and oxy-acetylene welding or other radiant energy
21. Tenosynovitis or bursitis
22. Dermatitis (infection or inflammation of the skin on contact surfaces due to oils, cutting compounds or lubricants, dusts, liquids, solids, gases, vapors, or fumes)

## RULES AND REGULATIONS





## SEC. VII. REPORTING.

**A. Method.** The method of reporting notifiable diseases is set forth in the accompanying diagram.

**Whole-time County Health Service.** When residence of a case is in a county that provides whole-time health service, all reports whether from urban or rural areas should reach the office of the county health service, where a permanent record is kept.

**City Clerk's Office or City Health Officer's Office.** When residence of the patient or family concerned is in a county seat or other city prepared to keep a record of communicable disease prevalence, physicians are requested to report cases to the office of the city clerk or of the city health officer, where a permanent record should be kept. Cases may be reported by telephone, by card or by personal communication.

Report cards, received or transcribed from the permanent record, are mailed daily to the State Department of Health. These cards carry the franking privilege and require no postage.

**District Health Service.** All reports from towns and rural areas of counties comprising the district should be forwarded daily to the office of the District Health Service or to the State Department of Health.

**State Department of Health and the United States Public Health Service.** Weekly and monthly morbidity summaries are forwarded from the State Department of Health to the Surgeon General of the United States Public Health Service.

### B. Special Reports.

#### 1. Tuberculosis, Occupational Disease.

(a) Cases of tuberculosis should be reported by name and not by initials only.

(b) For reporting tuberculosis and occupational disease, special cards or forms are obtainable from the State Department of Health, District and County Health Offices, which are to be filled out and submitted directly to the Department.

#### 2. Venereal Diseases.

Promptly after the first examination or treatment of any person with syphilis, gonorrhea or other venereal disease, the attending physician should mail to the State Department of Health a report giving initials or name and date of birth of the patient, age, sex, color, marital condition, occupation, name of the disease, probable source of infection and duration of the disease.

#### 3. Epidemic Diseases.

Outbreaks or cases and suspected cases of typhoid fever, undulant fever, Bacillary dysentery, meningococcus meningitis, pneumonia, Rocky Mountain spotted fever, septic sore throat, gastroenteritis, typhus fever, Weil's disease, may be reported to District and County Health Services or directly to the State Department of Health.

#### 4. Who Should Report

(a) Chief responsibility for reporting rests upon physicians and health officers.

(b) In the absence of an attending physician, NURSES should report to the health officer such case or cases as come under their observation.

(c) In the absence of an attending physician, any superintendent, teacher, parent or other person should report to the health officer such case or suspected case of which he has knowledge.

5. Printed Report Cards and Forms. Printed cards and forms for reporting of communicable and occupational diseases are obtainable from District, County and City Health Offices and from the State Department of Health.

## SEC. VIII. ISOLATION.

A. **Communicable Disease Control a Cooperative Matter.** The control of communicable disease can be accomplished only in so far as people generally cooperate whole-heartedly in abiding by the restrictive rules. The latter should not be regarded so much as LAWS, but as detailed instructions whereby one can practice the Golden Rule in matters of this kind.

B. **The Breadwinner.** The breadwinner may be allowed to live in the house and attend to his work when the Health Officer is satisfied of the following conditions:

1. That the patient can be isolated so that the breadwinner need not and does not come in contact with him.
2. That the breadwinner in the course of his occupation does not handle food including milk, designed for public consumption.
3. That the breadwinner does not come in contact with groups of children.
4. That the breadwinner, if the disease be smallpox, gives assurance of existing immunity by evidence of successful vaccination or revaccination within seven years, or as the result of a known, previous attack of the disease.
5. That the breadwinner, if the disease be diphtheria or scarlet fever, give evidence of immunity and of freedom from being a carrier of the germs of these diseases.

C. **Moving a Person Under Isolation.** Inasmuch as the restrictions placed about communicable disease, are imposed by authority of the State Department of Health and Local Boards of Health, the removal of a patient from one place to another requires the prior approval of these bodies.

1. If such removals are within a single health jurisdiction, only the permit of the local health officer is required.
2. If transfer to another health jurisdiction within the state is desired, there must be secured:
  - (a) The permit of the local health officer where the case now is.
  - (b) The permit of the local health officer to whose jurisdiction the transfer is proposed.
  - (c) The permit of the State Commissioner of Health to effect the transfer.
3. If the transfer is to another state, the three permits mentioned are required for Iowa, and the latter two from the state concerned.

D. **On a Dairy Farm.** As long as there is a case of TYPHOID FEVER, DYSENTERY (amebic or bacillary), SCARLET FEVER, SEPTIC SORE THROAT or similar disease on a dairy farm, no dairy products of any kind may be sold EXCEPT with the written approval of the State Department of Health or its representative in the district or county health office. Approval for the retail sale or delivery of

raw dairy products will not be granted except under the following conditions:

1. That the person handling the dairy products has not been in contact with the case within the period of incubation of the disease concerned.
2. That the milk utensils do not go into the house under isolation, nor into any shed, kitchen or other similar structure attached to such house.
3. That the milk utensils can be sterilized in a building separate from the house that is under isolation.

The dairy products may be handled by some person known not to have been exposed to the disease for which the premises are under isolation.

When the Health Officer is satisfied that the condition will be as stated above, he should report the fact to the district or county health office or to the State Department of Health with a request for approval for the sale of dairy products from the isolated area. The name of the owner and location of the dairy should be given in the Health Officer's letter. Upon receipt of the approval, the Health Officer may give permission for the sale of dairy products from the area under isolation.

## SEC. IX. PLACARDS

Sample placards, cards and literature for use when homes or premises are isolated for certain communicable diseases, are available on request from the office of the District or County Health Services concerned, or from the State Department of Health.

## SEC. X. DISINFECTION.

### A. Concurrent Disinfection. See p. 21.)

1. Discharges from infected eyes, ears, nose, throat and skin lesions may be collected on sterile cotton, gauze or paper and burned.
2. Bed and body linen should when soiled, be placed in a container, with water containing a weak solution of a disinfectant such as lysol (about four ounces to a gallon of water). Soiled linen should be further treated by boiling, after which it may be washed with other laundry.
3. Fingers of the attendant should be kept away from the mouth while caring for the patient. Frequent washing of hands is indicated.
4. Special precautions need to be exercised in the care of patients with typhoid fever, paratyphoid fever and dysentery.

**B. Terminal Disinfection.** When careful attention is given to the patient during the course of illness (concurrent disinfection), need for terminal disinfection is lessened greatly.

1. Floors, woodwork, furniture and other articles in the room occupied by the patient may be disinfected with use of soap and water, fresh air or sunlight.

## SEC. XI. FUMIGATION.

Fumigation with gaseous disinfectants, following infectious diseases, is neither required nor recommended. Fumigation with vapors such as formaldehyde and sulphur has long been regarded as useless by health authorities. Experiments have shown that these gases in



larger amounts destroy insects and animals but not bacteria. The late Charles V. Chapin, M. D., health officer for nearly 50 years, of Providence, Rhode Island, discarded fumigation in that city as long ago as 1905 for diphtheria, and in 1908 in scarlet fever cases. He observed no increase in the prevalence of these diseases in the years which followed. The cost of fumigation, to be made effective, would be prohibitive in most families. Fumigation, as usually performed, is only a "smell-producing process" and serves but to give people a false sense of security.

## SEC. XII. FUNERALS.

Communicable diseases such as diphtheria, scarlet fever and meningitis are regarded as being spread from person to person through transfer of the causative germ (through speech, coughing, sneezing) from the throat of the living, infected individual (patient or carrier) to others who are susceptible.

It is improbable that a dead body plays any part in transmitting disease to people in the same room or building. A possible exception to the foregoing statement might be the body of a patient who had died of smallpox in the severe form; the hazard of exposure in such instance would be limited to the embalmer or person who actually handled the body and who was not known to be immune through successful vaccination and revaccination.

Regulations with reference to funerals are as follows:

Recommendations and Regulations pertaining to funerals when death is attributed to communicable diseases including diphtheria, encephalitis, meningococcus meningitis (cerebro-spinal fever), poliomyelitis (infantile paralysis), scarlet fever and smallpox, are as follows:

1. In consideration of the fact that a dead body ordinarily plays no part in the spread of infection or of communicable disease, a hermetically sealed casket should not be required.

2. Persons who have been in the isolated area may be released from isolation for the purpose of accompanying the body to a funeral home, church or cemetery, provided that they:

- (a) Use a separate car or means of conveyance;
- (b) remain in separate room or separate from the public and avoid nearness to others in attendance;
- (c) return to the area of isolation and remain there until premises are released from isolation.

3. When death is caused by meningitis of above mentioned type, scarlet fever, diphtheria, poliomyelitis, or smallpox, the casket should remain closed when service is held indoors.

- (a) Special arrangements may be made for members and relatives of the immediate family to view the remains prior to the funeral service.

## SEC. XIII. CLOSING OF SCHOOLS.

On the outbreak of an epidemic, there is often a popular demand that the schools be closed. This is based upon the belief that infection may spread among the children in attendance. It is noteworthy, however, that health authorities and the Rules and Regulations of state departments of health in general omit any recommendations that schools be closed. The reasons for this are:

(1) Children in schools are under more careful disciplinary control than they are in their homes. With effective supervision by the health officer and with the aid of a trained and experienced community nurse,

in cooperation with school officials and the pupils themselves, the children are safer at school than outside.

(2) Closure of schools is futile, unless all susceptible children are forbidden to leave their own yards. Permitting them to roam the streets, to attend the moving picture theatres, churches, social gatherings, or to indulge in unsupervised group play, may be much more dangerous from the standpoint of interchanging infection, than if they were under the discipline of the school room.

(3) Past experience has shown that the mere closing of the schools has had little or no effect upon the progress of epidemic diseases. Unless, therefore, a community is prepared to declare a complete and rigid embargo upon all susceptible children of school age, isolating them universally to the limits of their own yards and absolutely forbidding them to play with children of other families, the SCHOOLS, ordinarily, **SHOULD NOT BE CLOSED.**

(4) School boards, parent-teacher groups and other sponsoring agencies should concentrate on such efforts, year by year, as will assure immunity of children against diphtheria, smallpox and other infectious diseases for which specific preventive measures are available.

Parents are urged to confer with the attending physician and to have children immunized against preventable diseases, early in life.

#### **SEC. XIV. CARRIERS.**

Carriers may be those developing the disease (incubatory carriers), those who are convalescent from the disease (convalescent carriers) or those who discharge germs for years or throughout life (chronic carriers). They also may be contact carriers, resulting from direct contact with infection.

Any person who has been determined to be a carrier of the germs of amebic dysentery, bacillary dysentery, typhoid fever or paratyphoid fever shall be subject to the special supervision of the State Department of Health. Every physician and health officer should report such carriers to the State Department of Health immediately upon their discovery.

#### **RECOGNITION OF TYPHOID CARRIERS**

It is estimated that at least two percent of those who recover from an attack of typhoid fever, become chronic carriers and continue to discharge typhoid organisms in the bowel (or bladder) discharges throughout the remainder of life.

The most opportune time to discover a typhoid carrier, is during and immediately following the period of convalescence. These rules and regulations require that every typhoid fever patient show evidence of freedom from a bacillus carrier state, before being released.

Two specimens of the bowel discharges and of the urine, secured at an interval of not less than 24 hours and preferably one week, should be collected in feces and urine containers and forwarded promptly to the State Hygienic Laboratory. Care should be taken that not larger than a pea-sized portion of fecal matter be transferred to the bottle which contains a 30 percent solution of glycerine. (When not in use, feces and urine containers should be kept under constant refrigeration.)

Should typhoid bacilli persist in the bowel (or bladder) discharges, additional specimens should be forwarded to the laboratory at intervals of one or two months. An individual who continues to show the presence of typhoid organisms in the bodily discharges a year after recovery from typhoid fever, is classed as a chronic typhoid carrier.

Typhoid carriers are the chief source of infection in connection with active (sporadic or multiple) cases of typhoid fever. Specimens from suspected carriers should be obtained in the same manner as for release following recovery.

Information relative to a typhoid carrier is regarded as confidential.

**Books.** The danger of infection from books has been exaggerated. Books which have not been handled by a person ill with a communicable disease need not be suspected. Books actually handled by a patient with diphtheria, scarlet fever, or any disease of like nature may be treated as follows:

1. Books in a grossly soiled condition should be burned.
2. Books not obviously soiled may be kept out of circulation for three weeks. They should be identified in such a manner that they will not become mixed with other books. Exposure to sunlight and diffuse daylight, with books open and upright, will aid in killing germs.



# IOWA STATE DEPARTMENT OF HEALTH

## APPENDIX A

### Reporting and Administrative Control of Communicable Disease

Adequate reporting of communicable and occupational diseases, to local health officials and through them to District Health Services and to the State Department of Health, is the first step in disease control and prevention. Adequate reporting is vitally dependent upon a type of local health organization which is county-wide in character and jurisdiction.

#### A. Local health officers and local (township) boards of health

##### 1. To whom to report

Attending physicians and others should notify cases of communicable disease to the local health officer, town or township clerk. Report cards should be mailed to the District Health Office when addressed to that office, or to the State Department of Health. General duties of the health officer are stated in paragraph 7, page 9 of these Rules and Regulations.

##### 2. Institution of Isolation and Placarding

Establishment of Isolation and placarding of homes should be carried out in towns and cities by the person designated by the local board of health and in rural areas by the township clerk, under direction of the local health officer and in accordance with procedures as set forth in the Table on the two following pages.

#### B. County Health Units

Procedure in reporting of communicable and occupational diseases is outlined in Section VII of these Rules and Regulations, pages 12-14.

#### C. Minimum Period of Isolation

The minimum period of isolation for various communicable diseases, based on the "Period of communicability", is shown in Column 3 of the Table on the following pages. (See paragraph 6 for each disease, Sec. XV).

#### D. Placarding

Regulations with reference to placarding of homes are set forth in the Table on the next two pages (Column 4).

#### E. Quarantine of Home Contacts

See Column 5 of the following Table.

# RULES AND REGULATIONS

\*Summary of Rules Pertaining  
Period of Communicability, Period of  
of Eleven Common

DISEASE	Incubation Period	Period of Communicability
DIPHTHERIA	2 to 5 days	Usually 2 weeks
MEASLES	10 days, from exposure to onset 13-15 days, from expo- sure to rash	Minimum 9 days, from 4 days before, to 5 days after rash
MENINGITIS (Meningococcus)	2 to 10 days	During course of disease and until causative germ is absent
POLIOMYELITIS	7 to 14 days	Shortly before onset and during first week or two of the disease
SCARLET FEVER	2 to 7 days	Usually until <sup>2</sup> 3 weeks from onset
SMALLPOX	8 to 16 (21) days	From onset to disappear- ance of scabs
TYPHOID FEVER	3 to 38 days, usually 7 to 14 days	From prodromal symptoms until release specimens are free from E. typhi
WHOOPING COUGH	7 to 16 days	From early catarrhal period and until 3 weeks after onset of spasmodic cough or "whoop"
CHICKENPOX	14 to 21 days	From 6 to 10 days after onset
MUMPS	12 to 26 days	From 1 to 3 days before onset, until swelling has gone
GERMAN MEASLES	14 to 21 days	From 4 to 7 days after catarrhal symptoms

(a)—"Isolation" describes the limitation put upon the movement of the known sick or "carrier" individual.

(b)—"Quarantine" describes the limitation put upon exposed or "contact" individuals in the household.

# IOWA STATE DEPARTMENT OF HEALTH

to the Incubation Period,  
Isolation(a), Placarding and Quarantine(b)  
Communicable Diseases

Isolation(a) Period for Patient	Placarding of Homes	Quarantine(b) of Home Contacts
Minimum 16 days from onset and until 2 negative cultures	Yes until released from iso- lation	Children and adults (food handlers, teachers) during isolation may live else- where, with release after negative culture
Minimum Until 5 days after appearance of rash	Yes for isolation period; may institute by mail	Exclusion of susceptible chil- dren and teachers from public, for 14 days from last exposure, when prac- ticable (see pp. 46-48)
Minimum 14 days from onset	Yes until 14th day after onset	None—Exclude children and teachers from public during isolation, or until 10 days after segregation from case
Minimum 14 days from onset of prodromal symptoms	Yes until 14th day after onset	Children, teachers, food han- dlers. Exclude from public until 14 days after last ex- posure
<sup>14</sup> / <del>21</del> Minimum days from onset	<sup>14</sup> / <del>21</del> <sup>th</sup> Yes until <del>21</del> <sup>st</sup> day after onset	Exclusion of children, food handlers, teachers from public until 7 days after last exposure
Minimum 14 days from onset	Yes until 14th day after onset	Vaccinate all contacts within 24 hours after first expos- ure and observe; otherwise isolate 16 days
Until 2 successive stool specimens prove nega- tive	Yes while communicable	None, but urge prompt im- munization of susceptible contacts. See special in- structions, pp. 14, 17, 75-77
Minimum 21 days from onset of "whoop"	Yes until 21st day of "whoop"; may institute by mail	Exclusion of non-immune children from public for 14 days after last exposure
Minimum 10 days from onset	Yes when practicable; may institute by mail	None—but rule out smallpox
Minimum 14 days	Yes when practicable; may institute by mail	None
Minimum 5 days	No	None

\*Rules as summarized in this Table were adopted by the State Board of Health at its meeting on January 11, 1944, as part of the Rules and Regulations of the Iowa State Department of Health.





## SEC. XV. THE CONTROL OF COMMUNICABLE DISEASES\*

### Report of the Committee of the American Public Health Association

In October, 1916, a committee of the Health Officers Section of the American Public Health Association was appointed to prepare standard regulations for the administrative control of the communicable diseases for which notification is usually required by State and municipal health authorities throughout the United States. The report of this committee was published in Public Health Reports, volume 32, No. 41, October 12, 1917.

This report was revised during 1926 by the successor of the original committee, to reconcile it with advances in the medical sciences in the previous 10 years. The revised report, approved by the American Public Health Association on October 14, 1926, and officially approved by the United States Public Health Service, was published in the Public Health Reports, volume 41, No. 51, December 17, 1926.

The general form of presentation and much of the matter of the 1926 revision was used in the Report of the Committee on Communicable Disease Control of the White House Conference, published in 1931.

The revision published in 1935, Public Health Reports, volume 50, No. 32, August 9, 1935, was made by the Subcommittee on Communicable Disease Control, of the Committee on Research and Standards of the American Public Health Association, and it was officially approved by the United States Public Health Service. The present revision has been called for because of immediate needs connected with military training, and the advisability of having procedures for communicable disease control based as nearly as practicable upon identical and authoritative information. The Subcommittee on Communicable Disease Control of the Committee on Research and Standards of the American Public Health Association has been responsible for the present text as officially approved by the Association and by the United States Public Health Service.

The terms used are first defined. Each disease is briefly described with regard to its clinical and laboratory recognition, the etiological agent, the source of infection, the mode of transmission, the incubation period, the period of communicability, susceptibility and immunity, and prevalence.

Following this are described methods of control—first, those affecting the individual, contacts, and immediate environment, and second, general and specific measures bearing upon the control or prevention of the disease in question.

Inasmuch as the laws under which various boards and departments of health operate require differences in the legal phraseology of rules, regulations, or sections of sanitary codes dealing with the control of communicable diseases, the committee has refrained from preparing formal regulations under each disease. As the report is at present

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submitted, any health officer, board of health, or legislative body having the power to make rules or regulations, or to enact sections of sanitary codes dealing with the control of communicable diseases can, by reference to the description of the disease and recommendations for methods of control herewith presented, prepare the necessary text upon which the educational and administrative acts of the health officer will be based.\*

The present committee is indebted, as its predecessors have been, for expert opinion and critical comment upon its provisional text, to many physicians and others, both within and without the Association, and acknowledgment of their contributions to the accuracy and completeness of the report in its present form is herewith gratefully expressed.

Haven Emerson, M. D., Chairman; James A. Doull, M. D.; James P. Leake, M. D.; Ralph S. Muckenfuss, M. D.; Alton S. Pope, M. D.; George H. Ramsey, M. D.; Ernest L. Stebbins, M. D.; Subcommittee on Control of Communicable Diseases of the Committee on Research and Standards of the American Public Health Association.

## LISTS OF DISEASES

### Principal List

List of communicable diseases for which notification is usually required in the States and cities of the United States

	Page		Page
Actinomycosis .....	24	Plague, bubonic, septicemic,	
Anthrax .....	25	pneumonic .....	52
Chickenpox (varicella) .....	27	Pneumonia, acute lobar .....	54
Cholera .....	28	Poliomyelitis .....	55
Conjunctivitis, acute infectious		Psittacosis .....	56
(of the newborn, not in-		Puerperal infection (puerperal	
cluding trachoma) .....	29	septicemia) .....	57
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Dysentery, amebic (amebiasis) .....	32	(or tick) fever .....	60
Dysentery, bacillary .....	34	Scarlet fever (scarlatina) .....	61
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gic and nonlethargic) .....	35	Smallpox (variola) .....	63
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Gonorrhea .....	39	Trichinosis .....	69
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(ancylostomiasis) .....	41	Tuberculosis, other than	
Influenza .....	42	pulmonary .....	73
Leprosy .....	44	Tularemia .....	74
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Measles (rubeola) .....	46	Typhus fever .....	77
Meningococcus meningitis		Undulant fever (brucellosis) ....	78
(cerebro-spinal fever) .....	48	Whooping cough (pertussis) ....	79
Mumps (infectious parotitis) ....	50	Yellow fever .....	80
Paratyphoid fever .....	51		

\*In endeavoring to prepare an informative text rather than to propose standard procedures, or describe the prevailing practices of health departments, the opinion of the committee unhampered by tradition or local usage has been expressed.

## Supplementary Lists

## A

Communicable diseases or infestations occurring in the United States and Insular Possessions, but for which notification to the health authorities is not everywhere required

Asariasis .....	82	tis, nummular keratitis) .....	89
Coccidioidomycosis (coccidioidal granuloma, "Valley fever") .....	83	Lymphogranuloma venereum (inguinale) and climatic bubo <sup>1</sup> .....	90
Common cold .....	84	Pediculosis (lousiness) .....	91
Filariasis .....	85	Rat-bite fever (sodoku) .....	92
Hemorrhagic jaundice (spiro- chetosis icterohemorrhagic, Weil's disease) .....	86	Relapsing fever .....	93
Hepatitis, infectious (acute ca- tarrhal jaundice) .....	87	Ringworm (dermatophytosis)....	94
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Kerato-conjunctivitis, infectious (superficial punctate kerati-		Schistosomiasis .....	95
		Vincent's infection (Vincent's angina, ulcerative or necrotic stomatitis trench mouth) .....	97
		Yaws (frambesia) .....	98

## B

Diseases of concern to health officers because of their group or epidemic occurrence and the practicability of their prevention, and for these reasons often included among those notifiable to the health authority, but not to be considered communicable.

Botulism .....	99
Food infections and poisonings.....	100
Pellagra .....	101

The committee adopted the following definitions of terms:

1. **Carrier.**—A person who, without symptoms of a communicable disease, harbors and disseminates the specific micro-organisms. As distinct from a carrier, the term "infected person" is used to mean a person in whose tissues the etiological agent of a communicable disease is lodged and produces symptoms.

2. **Cleaning.**—This term signifies the removal by scrubbing and washing, as with hot water, soap, and washing soda, of organic matter on which and in which bacteria may find favorable conditions for prolonging life and virulence; also the removal by the same means of bacteria adherent to surfaces.

3. **Contact.**—A "contact" is any person or animal known to have been sufficiently near an infected person or animal to have been presumably exposed to transfer of infectious material directly, or by articles freshly soiled with such material.

4. **Delousing.**—By delousing is meant the process by which a person and his personal apparel are treated so that neither the adults nor the eggs of *Pediculus corporis* or *Pediculus capitis* survive.

5. **Disinfection.**—By this is meant the destroying of the vitality of pathogenic micro-organisms by chemical or physical means.

When the word "concurrent" is used as qualifying disinfection, it indicates the application of disinfection immediately after the discharge of infectious material from the body of an infected person, or after the soiling of articles with such infectious discharges, all personal contacts with such discharges or articles being prevented prior to their disinfection.

<sup>1</sup>This title does not include granuloma venereum (inguinale), which is a different clinical condition.



When the word "terminal" is used as qualifying disinfection, it indicates the process of rendering the personal clothing and immediate physical environment of the patient free from the possibility of conveying the infection to others, at the time when the patient is no longer a source of infection.

6. **Disinfesting.**—By disinfesting is meant any process, such as the use of dry or moist heat, gaseous agents, poisoned food, trapping, etc., by which insects and animals known to be capable of conveying or transmitting infection may be destroyed.

7. **Education in personal cleanliness.**—This phrase is intended to include all the various means available to impress upon all members of the community, young and old, and especially when communicable disease is prevalent or during epidemics, by spoken and printed word, and by illustration and suggestion, the necessity of:

(1) Keeping the body clean by sufficiently frequent soap and water baths.

(2) Washing hands in soap and water after voiding bowels or bladder and always before eating.

(3) Keeping hands and unclean articles, or articles which have been used for toilet purposes by others, away from mouth, nose, eyes, ears, and genitalia.

(4) Avoiding the use of common or unclean eating, drinking, or toilet articles of any kind, such as towels, handkerchiefs, hairbrushes, drinking cups, pipes, etc.

(5) Avoiding close exposure of persons to spray from the nose and mouth, as in coughing, sneezing, laughing, or talking.

8. **Fumigation.**—By fumigation is meant a process by which the destruction of insects, as mosquitoes, fleas, bedbugs, and body lice, and animals, as rats, is accomplished by the employment of gaseous agents.

9. **Isolation.**<sup>2</sup>—By isolation is meant the separating of persons suffering from a communicable disease, or carriers of the infecting micro-organism, from other persons, in such places and under such conditions as will prevent the direct or indirect conveyance of the infectious agent to susceptible persons.

10. **Quarantine.**<sup>2</sup>—By quarantine is meant the limitation of freedom of movement of persons or animals who have been exposed to communicable disease for a period of time equal to the longest usual incubation period of the disease to which they have been exposed.

It is still considered necessary to require strict isolation of the patient for the period of communicability, and quarantine or immunization of contacts in certain diseases, notably smallpox. However, in some other diseases, such as poliomyelitis and encephalitis, isolation of the patient has but little apparent effect in limiting the spread of the disease, and the period of communicability is not known with reasonable accuracy in any given case.

Case-to-case infection is relatively infrequent in these latter two diseases; and yet the patient must be regarded as a potential source of infection and suitable precautions must be taken, even if these barriers to transmission of the disease are but partially effective. Uncertainty as to the exact duration of the period of communicability does not justify neglect of reasonable isolation measures but rather adds to our obligation to educate patients, the family, and the attending physician in the advantages to be had from separating the sick from the well, and in taking precautionary measures voluntarily when the presence of a com-

<sup>2</sup>In view of the various ambiguous and inaccurate uses to which the words "isolation" and "quarantine" are not infrequently put, it has seemed best to adopt arbitrarily the word "isolation" as describing the limitation put upon the movements of the known sick or "carrier" individual or animal, and the word "quarantine" as describing the limitation put upon exposed or "contact" individuals.



municable disease is suspected and before a diagnosis is established, after the official period of isolation is past, and generally during the epidemic prevalence of such diseases in the community.

The five specific objectives of personal cleanliness as defined above (7), if conscientiously attempted, will materially aid in reducing the amount of frequency of infection.

Isolation of a patient with a communicable disease from visitors is often of benefit to the patient by reducing the likelihood of additional and complicating infections, as well as a protection to others; quiet, freedom from excitement and fatigue of visits, and complete rest are important factors in the medical and nursing management of such patients and directly contribute to recovery.

11. **Renovation.**—By renovation is meant, in addition to cleansing, such treatment of the walls, floors, and ceilings of rooms or houses as may be necessary to place the premises in a satisfactory sanitary condition.

12. **Report of a disease.**—By a report of a disease is meant the notification to the Health Department and, in the case of communicable disease in animals, also to the respective Department of Agriculture, or Livestock Sanitary Authority which has immediate jurisdiction, that a case of communicable disease exists or is suspected of existing in a specified person or animal at a given address.

Each administrative health jurisdiction will ordinarily determine what diseases should be reportable, according to their prevalence or their practical importance from the points of view of the administrator, the epidemiologist, and the statistician. It is expected that local or State regulation will require the reporting of any unusual or group expression of illness which may be of public concern whether or not known to be or suspected of being communicable in nature, regardless of its inclusion in the lists on pages 4 and 5.

13. **Susceptible.**—A “susceptible” is a person or animal who is not known to have become immune to the particular disease in question by natural or artificial process.

14. **Virus, filterable.**—The term “filterable virus” as defining the etiological agent of certain diseases is used in the sense of a casual agent differentiated from other kinds of infectious agents such as bacteria, protozoa, etc. Many of these filterable viruses can be grown *in vitro* in the presence of living susceptible cells and such cultures will produce regularly typical diseases in animals and in man. The term “filterable virus” has a significance comparable to that of bacterium, spirochete, or protozoon. The term “filterable virus” is as definite a description of an etiological agent as is the statement that the typhoid bacillus causes typhoid fever. The idea conveyed by the statement that a filterable virus is the etiological agent is that the cause of this disease is known, even though present knowledge does not permit further precision in distinguishing among filterable viruses except by reference to the name of the disease produced by each.

The items considered necessary for presentation by the committee with regard to each disease are the following:

1. Recognition of the disease; clinical criteria; laboratory verification.
2. Etiological agent.
3. Source of infection.
4. Mode of transmission.
5. Incubation period.
6. Period of communicability.
7. Susceptibility and immunity.
8. Prevalence.
9. Methods of control:

- A. The infected individual, contacts, and environment.
  - 1. Recognition of the disease and reporting.
  - 2. Isolation.
  - 3. Concurrent disinfection.
  - 4. Terminal disinfection.
  - 5. Quarantine.
  - 6. Immunization.
  - 7. Investigation of source of infection.
- B. General measures.
- C. Epidemic measures (occasionally requiring separate mention)

Therapy, whether nonspecific or specific, is not considered to come within the scope of administrative control of communicable diseases, except in a few instances in which there is obligation or authority to provide materials and services for the treatment of infected individuals with the object of abbreviating the duration of the communicable stage of the disease. Wherever specific therapeutic products are best, or only available through the facilities or funds of the Department of Health, the provision of these, as well as the provision of laboratory diagnostic aids, is a recognized function of the Department of Health in the interest of early, accurate, and effective treatment of infected persons.

Numerous products used in the treatment of or for the development of immunity against communicable disease are supplied by many State and city health departments from their own laboratories or by purchase from commercial sources, such as those used in diphtheria, smallpox, tetanus, rabies, meningococcus meningitis, syphilis, pneumonia of certain types, etc.

#### IMPORTANT MEASURES IN BOLD-FACED TYPE

Certain measures in the control of some diseases are of particular importance, on account either of their efficiency in preventing the disease or of the danger of its spread if they are neglected, and also on account of their proved practicability. These are emphasized in the text by being printed in bold-faced type.

#### Actinomycosis

- 1. **Recognition of the disease.**—A local or general, acute or chronic suppurative process combined with growth of connective tissue, and characterized by the presence in the lesions of vegetations or colonies of the specific micro-organism, identifiable by microscopic examination of discharges from the lesions. It may be confused with pulmonary or generalized tuberculosis.
- 2. **Etiological agent.**—*Actinomyces hominis* and other species of this genus.
- 3. **Source of infection.**—Unknown. Possibly in some case of actinomycosis in man, *actinomyces hominis* previously existed as a saprophyte in the oral cavity (carious teeth, interstices between teeth, and crypts of tonsils).
- 4. **Mode of transmission.**—Among cattle, principally by grains, grasses, and other cattle fodder, and stable bedding contaminated by discharges from lesions of the disease, infecting abrasions or wounds of oral cavity or body surface. It is not probable that the disease is transmitted from man to man. It may be transmitted from animal to man, but only rarely and indirectly through infection of oral or skin wounds by contaminated materials. The disease sometimes follows extraction of carious or broken teeth, or accidental injury, particularly to the jaws.

5. **Incubation period.**—Undetermined and variable.
6. **Period of communicability.**—As long as open lesions remain, as proved by the presence of the infectious agent on microscopic or cultural tests.
7. **Susceptibility and immunity.**—Susceptibility in cattle and man is general. Acquired immunity does not follow occurrence of the disease in man, and artificial immunity is not practicable.
8. **Prevalence.**—Infrequent among humans.
9. **Methods of control:**
  - A. The infected individual, contacts, and environment:
    1. Recognition of the disease and reporting: Clinical symptoms, confirmed by microscopic examination of discharges from the lesions.
    2. Isolation: None, provided the patient is under adequate medical supervision.
    3. Concurrent disinfection: Of discharges from lesions and articles soiled therewith.
    4. Terminal disinfection: By thorough cleansing.
    5. Quarantine: None.
    6. Immunization: None.
    7. Investigation of source of infection: In some cases exposure to infected cattle may be important.
  - B. General measures:
    1. Observance of hygiene of oral cavity.
    2. Inspection of meat, with condemnation of carcasses or infected parts of carcasses of infected animals.
    3. Destruction of known animal sources of infection.

### Anthrax

1. **Recognition of the disease.**—Two forms occur—external, due to direct inoculation through a cut or abrasion, and internal, caused by ingestion or inhalation of the bacilli or their spores. Following the initial papule and vesicle at the external site of inoculation, an eschar develops and then hard edematous swelling of deeper and adjacent tissues. Freedom from pain is usual. Constitutional symptoms do not parallel the gravity of the lesions. Confirmation by microscopic examination of the lesions and discharges for *B. anthracis*. Internal anthrax resembles intestinal poisoning, toxic pneumonia, or meningitis; the recovery of the bacilli from the blood or spinal fluid confirms the diagnosis.
2. **Etiological agent.**—Anthrax bacillus, *Bacillus anthracis*.
3. **Source of infection.**—Hair, hides, flesh, and feces of infected animals.
4. **Mode of transmission.**—Inoculation as by accidental wound or scratch, inhalation of spores of the infectious agent, ingestion of insufficiently cooked meat, and mechanically by flies and mosquitoes.
5. **Incubation period.**—Within 7 days, usually less than 4.
6. **Period of communicability.**—During the febrile stage of the disease and until lesions have ceased discharging. Infected hair and hides of infected animals may communicate the disease many months after slaughter of the animal and after drying of hide, fur, or hair, unless disinfected.



7. **Susceptibility and immunity.**—Man is not as susceptible as the domestic animals, especially the herbivora, but more so than the carnivora. Immunity may develop following an attack of the disease. Artificial active immunity, widely used for domestic animals, is not appropriate for humans.
8. **Prevalence.**—Rare and sporadic in humans and associated only with the occurrence of the disease in cattle, or with handling hide and hair products from infected animals. In epidemic form in cattle in various foreign countries from time to time.
9. **Methods of control:**
  - A. The infected individual, contacts, and environment:
    1. Recognition of the disease and reporting: Clinical and bacteriological.
    2. Isolation of the infected individual until the lesions have healed.
    3. Concurrent disinfection: Of the discharges from lesions and articles soiled therewith. Spores can be killed only by special measures such as steam under pressure or burning.
    4. Terminal disinfection: Thorough cleaning.
    5. Quarantine: None.
    6. Immunization: None.
  - B. General measures:
    1. Animals ill with disease presumably anthrax should be isolated immediately in the care of a veterinarian. Animals proved to have the disease should be killed and promptly destroyed, preferably by incineration.
    2. Immunization of exposed animals under direction of the United States Department of Agriculture, or State live-stock sanitary authority.
    3. Post-mortem examination should be made only by a veterinarian or in the presence of one.
    4. Milk from an infected animal should not be used during the febrile period.
    5. Control and disinfection of effluents and trade wastes and of areas of land polluted by such effluents and wastes from factories or premises, where spore-infected hides or other infected hide and hair products are known to have been worked up into manufactured articles.
    6. Every shipment of raw hides, wool, hair, or bristles from sources which are not known to be free from anthrax infection should be examined by an expert bacteriologist.
    7. A physician should be constantly employed by every company handling raw hides, or such companies should operate under the direct supervision of a medical representative of the health department.
    8. Every employee handling raw hides, hair, or bristles who has an abrasion of the skin should immediately report to a physician.
    9. Special instruction should be given to all employees handling raw hides in regard to the necessity of personal cleanliness.
    10. Tanneries and woolen mills should be provided with proper ventilating apparatus so that dust is promptly removed before reaching the respiratory tract of human beings.
    11. Disinfection of hair, wool, and bristles from sources known to be or suspected to be infected, before they are used or sorted.



12. The sale of hide from an animal infected with anthrax should be prohibited. A violation of this regulation should be immediately reported to the appropriate State livestock sanitary authority by telegram, stating the time, place, and purchaser to whom the hide was sold. The report should also be sent to the person purchasing the hide. Carcasses should be disposed of under the supervision of the appropriate livestock sanitary authority. Imported hides are subject to regulations administered by the United States Bureau of Animal Industry. In the event that infection is introduced, the State livestock sanitary authorities have jurisdiction over infected animals and the local or State health authorities have jurisdiction over infected person.

### Chickenpox (Varicella)

1. **Recognition of the disease.**—Clinical picture is of an acute disease with a slight fever, mild constitutional symptoms, and an eruption, maculopapular for a few hours, often not observed, vesicular lasting 3 to 4 days, leaving a granular scab. Vesicles tend to be more abundant on the covered than on the exposed parts of the body, and frequently appear in different stages on the same region of the body. The vesicles may be so few as to escape observation.
2. **Etiological agent.**—A specific filterable virus.
3. **Source of infection.**—The infectious agent is presumably present in the lesions of the skin and of the respiratory tract; lesions of the latter, appearing early and sometimes inapparent, may render the disease communicable before the exanthem is in evidence.
4. **Mode of transmission.**—Directly from person to person; indirectly through articles freshly soiled by discharges from an infected person.
5. **Incubation period.**—Two to three weeks.
6. **Period of communicability.**—Probably not more than 6 days after the appearance of the first crop of vesicles, and certainly not more than 10 days. Especially communicable in the early stages of the eruption. One of the most readily communicable of diseases.
7. **Susceptibility and immunity.**—Susceptibility is practically universal among those who have not previously had the disease. An attack confers permanent immunity, with rare exceptions. Passive temporary immunity may be conferred by the use of convalescent serum from those recently recovered.
8. **Prevalence.**—Universal. Probably 90 percent of persons have had the disease by the time they are 15 years of age. Not uncommon in early infancy. Winter and spring are seasons of greatest prevalence in North America.
9. **Methods of control:**
  - A. The infected individual, contacts, and environment:
    1. **Recognition of the disease and reporting:** The chief public health importance of this disease is that cases thought to be chickenpox in persons over 15 years of age, or at any age during an epidemic of smallpox, are to be investigated to eliminate the possibility of their being smallpox.
    2. **Isolation:** Exclusion from school, and avoidance of contact with nonimmune persons should be made effective.
    3. **Concurrent disinfection:** Articles soiled by discharges from lesions.

4. Terminal disinfection: Thorough cleaning.
  5. Quarantine: None.
  6. Immunization: Passive immunization of susceptible children may be of value in institutions when exposure is feared, or under exceptional conditions in individual cases.
  7. Investigation of source of infection: Of no importance unless in persons over 15 years of age or when smallpox is suspected or is locally prevalent.
- B. General measures: None.

### Cholera

1. **Recognition of the disease.**—In a few mild cases, diarrhea may be the chief or only symptoms. In the typical case, rice-water stools, vomiting, and general symptoms of dehydration occur with thirst, pain, and coma. The cholera vibrios are found in the stools.
2. **Etiological agent.**—Cholera vibrio, *Vibrio comma*.
3. **Source of infection.**—Bowel discharges and vomitus of infected persons, and feces of convalescent or healthy carriers. Ten percent of contacts may be found to be carriers.
4. **Mode of transmission.**—By food and water polluted by infectious agent; by contact with infected persons, carriers, or articles freshly soiled by their discharges; by flies.
5. **Incubation period.**—One to five, usually three, days, occasionally longer if the healthy carrier stage, before development of symptoms, is included.
6. **Period of communicability.**—Usually 7 to 14 days or longer and until the infectious organism is absent from the bowel discharges. A high degree of communicability is usual.
7. **Susceptibility and immunity.**—Susceptibility is general, although natural immunity appears to exist to a limited degree. Acquired immunity is uncertain. Active artificial immunity for about 1 year may be obtained by vaccines.
8. **Prevalence.**—Absent in North America (except when introduced from abroad). Appears in epidemic form frequently in the Philippines.
9. **Methods of control:**
  - A. The infected individual, contacts, and environment:
    1. Recognition of the disease and reporting: Clinical symptoms confirmed by bacteriological examination of stools.
    2. Isolation of patient in hospital or screened room during communicable period.
    3. Concurrent disinfection: Prompt and thorough disinfection of the stools and vomited matter. Articles used by and in connection with the patient must be disinfected. Food left by the patient should be burned.
    4. Terminal disinfection: The room in which a sick patient was isolated should be thoroughly cleaned.
    5. Quarantine: Contacts for 5 days from last exposure or longer if stools are found to contain the cholera vibrio.
    6. Immunization: Prophylactic immunization of contacts is useful and advisable.
    7. Investigation of source of infection: Search for unreported cases and carriers. Investigate possibility of infection from polluted drinking water or from contaminated uncooked foods.

**B. General measures:**

1. Rigid personal prophylaxis of attendants by scrupulous cleanliness, disinfection of hands each time after handling patient or touching articles contaminated by dejecta, the avoidance of eating or drinking anything in the room of the patient, and the prohibition of those attendant on the sick from entering the kitchen.
2. The bacteriological examination of the stools of all contacts to determine carriers. Isolation of carriers.
3. Water should be boiled, if used for drinking or toilet purposes, or if used in washing dishes or food containers, unless the water supply is adequately protected against contamination or is so treated, as by chlorination, that the cholera vibrio cannot survive in it.
4. Careful supervision of food and drink: Where cholera is prevalent, only cooked foods should be used. Food and drink after cooking or boiling should be protected against contamination, as by flies and human handling.

C. Epidemic measures: Inspection service for early detection and isolation of cases; examination of persons exposed in infected centers for detection of carriers, with isolation or control of carriers; cleaning of rooms occupied by the sick, and the detention, in suitable camps for 5 days, of those desirous of leaving for another locality. Those so detained should be examined for detection of carriers.

**Conjunctivitis, Acute Infectious (of the Newborn, not including Trachoma)**

(This title to replace the terms Gonorrheal ophthalmia, Ophthalmia neonatorum, and Babies' sore eyes.)

1. **Recognition of the disease.**—Acute redness and swelling of the conjunctiva of one eye or of both eyes, with muco-purulent and purulent discharge in which the infecting micro-organism is identifiable by microscopic and cultural methods.
2. **Etiological agent.**—The gonococcus or some member of a group of pyogenic organisms, including the hemoglobinophic bacilli.
3. **Source of infection.**—Discharges from conjunctivae, or adnexa, or genital mucous membranes of infected persons.
4. **Mode of transmission.**—Contact with an infected person or with articles freshly soiled with discharges of such person.
5. **Incubation period.**—Irregular, but usually 36 to 48 hours.
6. **Period of communicability.**—During the course of the disease and until the discharges from the infected mucous membranes have ceased. Readily communicable.
7. **Susceptibility and immunity.**—Susceptibility is general. Acquired immunity does not follow an attack of the disease.
8. **Prevalence.**—Occurrence varies widely according to the observance or neglect of prophylactic use of a solution of silver nitrate or equivalent preparation in the eyes of the newborn by the attendant at the delivery. An infrequent complication in the present-day care of the newborn.



## 9. Methods of Control:

- A. The infected individual, contacts, and environment:
  1. Recognition of the disease: Clinical symptoms, confirmed where possible by bacteriological examination.
  2. Isolation: None, provided the patient is under adequate medical supervision.
  3. Concurrent disinfection: Disinfection of conjunctival discharges and articles soiled therewith.
  4. Terminal disinfection: Thorough cleaning.
  5. Quarantine: None.
  6. Immunization: None.
  7. Investigation of source of infection—among persons recently in contact with the patient: The disease in the newborn is almost always due to infection from the genital tract of the mother.
- B. General measures:
  1. Use of silver nitrate solution in the eyes of the newborn; antepartum treatment of mother if gonorrhea is suspected.
  2. Systematic treatment with an appropriate chemotherapeutic agent, such as sulfapyridine or sulfathiazole.
  3. Education as to personal cleanliness and as to the danger of the use of common towels and toilet articles.
  4. Carrying out of the measures indicated in methods for control of gonorrhea.

## Dengue

1. **Recognition of the disease.**—An acute febrile infection of sharp onset, usually with two paroxysms of short duration. Intense headache, joint and muscle pains, and irregular eruption are usual.
2. **Etiological agent.**—A specific filterable virus.
3. **Source of infection.**—The blood of infected persons during first 5, usually during first 3, days of the disease.
4. **Mode of Transmission.**—By the bite of infected mosquitoes, (*Aedes aegypti* or *Aedes albopictus* in the oriental tropics), from 11 days after biting a patient until the death of the mosquito.
5. **Incubation period.**—Three to 15 days, most often 5 or 6 days.
6. **Period of communicability.**—From the day before onset to the fifth day of the disease. Degree of communicability depends on the prevalence of infected humans and abundance of *Aedes aegypti* mosquitoes.
7. **Susceptibility and immunity.**—Susceptibility apparently universal. Acquired immunity may be temporary, but is usually permanent.
8. **Prevalence.**—Occurs only where the vector *Aedes* mosquitoes exist, mainly in tropics and subtropics. When occurring in epidemic form in the United States, begins usually in southernmost States, moving north until the range of the vector mosquito is stopped by climate or the season of the year. Common, and in frequent epidemics, in the Philippines. Occurs equally among males and females; less among indigenous than among visiting or transient whites where the disease commonly occurs.

## 9. Methods of control:

- A. The infected individual, contacts, and environment:
  1. Recognition of the disease and reporting.
  2. Isolation: The patient must be kept in a screened room.
  3. Concurrent disinfection: None.
  4. Terminal disinfection: None.



5. Quarantine: None.
  6. Immunization: None.
  7. Investigation of source of infection: Search for unreported or undiagnosed cases and for the *Aedes aegypti* mosquito and its breeding places.
- B. General measures: Measures directed toward elimination of mosquitoes (*Aedes aegypti*), screening of rooms.

### Diphtheria

1. **Recognition of the disease.**—An acute febrile infection, generally of the air passages, especially of tonsils, throat, and nose, marked by a patch or patches of dirty white and grayish membrane, from which cultures of the diphtheria bacillus may be obtained. Cases of diphtheritic infection in infants and of nasal diphtheria at all ages are often missed because of the lack of definite local symptoms.
2. **Etiological agent.**—Diphtheria bacillus, *Corynebacterium diphtheriae* (the Klebs-Loeffler bacillus).
3. **Source of infection.**—Discharges from diphtheritic lesions of nose, throat, conjunctiva, vagina, and wound surfaces. Secretions from the nose and throat of carriers of the bacillus.
4. **Mode of transmission.**—Directly by personal contact, indirectly by articles freshly soiled with discharges, or through infected milk or milk products.
5. **Incubation period.**—Usually 2 to 5 days, occasionally longer if the carrier state precedes the development of clinical symptoms.
6. **Period of communicability.**—Variable, until virulent bacilli have disappeared from the secretions and lesions. Usually 2 weeks or less, seldom over 4 weeks. In exceptional cases virulent bacilli remain in the throat and discharges from 2 to 6 months.
7. **Susceptibility and immunity.**—Infants born of mothers with an established immunity are relatively immune for the first 6 months of life. By the ninth month of life this passive congenital immunity has been lost in a high percentage of infants. Subsequently children and adults develop immunity apparently in approximate proportion to their contact with associates who carry the diphtheria bacillus with or without exposure to persons with recognized attacks of the disease. It is usual to find about half of the children of school age and three-quarters of adults in large cities immune. Such accidental immunity is less frequent among rural and small-town populations. Passive temporary immunity (10 days to 3 weeks) and active immunity of relatively permanent duration can be developed artificially. Recovery from attack of the disease, especially if with the aid of therapeutic diphtheria antitoxin, is not necessarily followed by active immunity.
8. **Prevalence.**—Endemic and epidemic. Two-thirds or more of the urban cases are in children under 10 years of age and two-thirds or more of the urban deaths occur in children under 5 years of age. More common in temperate zones than elsewhere, and in fall and winter months. Reduction in incidence, death rate, and case fatality rate has been progressive and marked in the past 30 years.<sup>4</sup>

<sup>4</sup>The falling birth rate and widespread immunization of young children in the past decade have in some cities and rural areas altered the age distribution of cases of diphtheria to marked degree.

## 9. Methods of control:

### A. The infected individual, contacts, and environment:

1. Recognition of the disease and reporting. By clinical symptoms with confirmation by bacteriological examination of discharges.
2. Isolation: Until 2 cultures from the throat and 2 from the nose, taken not less than 24 hours apart, fail to show the presence of diphtheria bacilli. Isolation may be terminated if the micro-organism reported as morphologically "positive," although persistently present, proves to be an avirulent form. Where termination by culture is impracticable, cases may be terminated with fair safety as a rule 16 days after onset of the disease. A virulence test should be made if practicable where positive throat cultures are reported 3 weeks or longer after onset of the disease.
3. Concurrent disinfection of all articles which have been in contact with the patient, and all articles soiled by discharges of the patient.
4. Terminal disinfection. At the end of the illness, thorough airing and sunning of the sick room, with cleaning or renovation.
5. Quarantine: All intimate child contacts, and adult contacts whose occupation involves handling of foods or close association with children, until shown by bacteriological examination not to be carriers.
6. Immunization: Passive immunization with antitoxin is rarely necessary for exposed persons over 5 years of age, for whose protection daily examination by a physician or nurse suffices. Infants and young children exposed to diphtheria in the family should receive a prophylactic dose of antitoxin without prior Schick testing, unless they are known to have been immunized.
7. Investigation of source of infection: In unreported cases, in carriers, and milk.

### B. General measures:

1. All children should be immunized against diphtheria. The following procedure is recommended: At 6 to 9 months of age either two doses of diphtheria toxoid, alum precipitated, or three doses of fluid diphtheria toxoid, at one month intervals. This same procedure should be applied to all children at or below 6 years of age if immunization has been neglected in infancy.<sup>5</sup> Children given an immunizing treatment during infancy should receive a single reinforcing dose on entrance to school.
2. Older children, and adults especially exposed, including teachers, nurses, and physicians, found to be Schick-positive should be actively immunized. In order to minimize local and constitutional reactions in members of these groups, it is desirable to carry out a preliminary "toxoid reaction test," nonreactors to receive toxoid and reactors multiple doses of suitably diluted toxoid.
3. Pasteurization of milk supply.
4. Educational measures to inform the public, and particularly the parents of little children, of the advantages of toxoid immunization in infancy.

<sup>5</sup>Active immunization by any method should not be presumed to be successful without routine Schick testing or testing a representative sample of those inoculated 3 months after such procedure.

**Dysentery, Amebic (Amebiasis)**

1. **Recognition of the disease.**—Insidious and undetermined onset characterizes mild acute cases, with digestive disturbance, anorexia, diarrhea or constipation, and usually little abdominal discomfort. Severe acute cases following massive infection may simulate acute appendicitis, or other acute surgical abdominal condition with high temperature and severe prostration. The subacute and chronic forms of the disease vary widely in the extent of local and constitutional symptoms. There may or may not be diarrhea or constipation; or these may alternate in the same patient.
2. **Etiological agent.**—*Endamoeba histolytica*.
3. **Source of infection.**—The bowel discharges of infected persons and of carriers.
4. **Mode of transmission.**—By drinking contaminated water and by eating infected foods, especially those that are commonly served cold and moist, and hand-to-mouth transfer of the infected material from moist objects soiled with discharges of an infected individual or carrier; by flies.
5. **Incubation period.**—From 2 days in severe infections to several months in subacute and chronic cases; commonly 3 to 4 weeks.
6. **Period of communicability.**—During course of infection and until repeated microscopic examination of stools show absence of the *Endamoeba histolytica* (either trophozoites or cysts). Direct transmission unusual.
7. **Susceptibility and immunity.**—Susceptibility to infection or to the carrier state is general; relatively few persons harboring the organism develop recognized symptoms; no artificial immunity.
8. **Prevalence.**—Not a common disease clinically recognized in continental North America but occurring often as an unrecognized disease. Epidemic outbreaks are rare. It is estimated that almost 5 percent of the population are carriers of cysts.
9. **Methods of control:**
  - A. The infected individual, contacts, and environment:
    1. Recognition of the disease and reporting: Clinical symptoms confirmed by microscopic examination of stools.
    2. Isolation: None.
    3. Concurrent disinfection: Sanitary disposal of the bowel discharges. Hand washing after use of toilet.
    4. Terminal disinfection: Cleaning.
    5. Quarantine: None.
    6. Immunization: None.
    7. Investigation of source of infection: Microscopic examination of stools of inmates of the household, or of work associates of the infected person, and of other suspected contacts, should be supplemented by search for direct contamination of water and foods by human feces.
  - B. General measures:
    1. Sanitary disposal of human feces.
    2. Protection of potable water supplies against fecal contamination, and boiling drinking water where necessary. Chlorination of water supplies as generally used has been found inadequate for the destruction of cysts.
    3. Supervision of the general cleanliness, of the personal health and sanitary practices of persons preparing and serving food in public eating places, especially moist foods eaten raw. The routine examination of food handlers to eliminate carriers from such occupations is of little or no practical value.



4. Education in personal cleanliness, particularly washing hands with soap and water after evacuation of the bowels.
5. Control of fly breeding and protection of foods against fly contamination by screening.
6. Avoidance of cross-connections between public and private auxiliary water supplies and of back-flow connections in plumbing systems.
7. Instruction of convalescent and chronic carriers in personal hygiene, particularly as to sanitary disposal of fecal waste, and hand washing after use of toilet.
- C. Epidemic measures: In case of epidemics due to relatively massive doses of infectious material, active measures should be employed to discover the source of infection, and to advise the public and the medical profession of the early and characteristic symptoms, of the serious immediate and remote results of such infection, and of the good results of treatment if instituted early.

### Dysentery, Bacillary

1. **Recognition of the disease.**—The disease exhibits an acute onset with diarrhea, in severe cases causing fever, tenesmus, and frequent stools containing blood and mucus. The milder cases are difficult to recognize clinically because of variability of symptoms. By adequate laboratory examination the infecting organism can usually be identified.
2. **Etiological agent.**—Dysentery bacilli, *Shigella dysenteriae*, *Shigella paradysenteriae*, and other species of the genus *Shigella*.
3. **Source of infection.**—The bowel discharges of infected persons and carriers. Healthy carriers are common.
4. **Mode of transmission.**—By eating contaminated foods, and by hand-to-mouth transfer of contaminated material; by flies; from objects soiled with discharges of an infected individual or of a carrier; by drinking contaminated water.
5. **Incubation period.**—1 to 7 days.
6. **Period of communicability.**—During the acute phase of the disease and until the micro-organism is absent from the bowel discharges. The stools may become negative rapidly, but chronic carriers occur.
7. **Susceptibility and immunity.**—Susceptibility is general among children, but less so, and the disease less severe, in adults. A relative and not permanent immunity follows recovery from the disease.
8. **Prevalence.**—Endemic, epidemic, and sporadic, but shares with other enteric infections in striking and progressive reduction wherever water supplies are rendered safe, sewage is disposed of in a sanitary manner, milk is pasteurized, and infant hygiene is of a good order. Most common in the summer months. Institutional outbreaks are frequent.
9. **Methods of control:**
  - A. The infected individual, contacts, and environment.
    1. Recognition of the disease and reporting:<sup>a</sup> Clinical symptoms confirmed by bacteriological tests.
    2. Isolation: Infected individuals during the communicable period of the disease, particularly rigid personal precautions by attendants.

<sup>a</sup>Groups of cases of acute diarrheal disorder should always be reported to the health officer at once, even in the absence of exact determination of the nature of the disease.



3. Concurrent disinfection: Bowel discharges.
  4. Terminal disinfection: Cleaning.
  5. Quarantine: None.
  6. Immunization: No method of immunization is satisfactory. Vaccines contain only a few of the many antigens and in addition reactions from their use may be severe.
  7. Investigation of source of infection: Important in epidemics; investigation of food, water, and milk supplies, general sanitation, and search for carriers may serve to detect the source and prevent further spread. For sporadic cases such investigation is time-consuming and gives meager results.
- B. General measures:
1. Protection and purification of public water supplies, together with prevention of subsequent contamination.
  2. Pasteurization of public milk supplies; use of boiled milk for infant feeding.
  3. Supervision of preparation and handling of other foods, particularly those which are moist and eaten raw.
  4. Hand washing, by food handlers in particular, following use of toilet.
  5. Prevention of fly-breeding; screening.
  6. Sanitary disposal of human excreta.
  7. Persons known to be infected, and their attendants, should be excluded from handling food for public consumption, and from handling the family food supply if possible.
  8. The exercise of rigid precautions in known cases of bacillary dysentery is requisite but is inadequate as a safeguard against the ever-present risk of infection from concealed sources. Reduction of high infant mortality rates is dependent upon prevention of diarrhea and enteritis. Infant hygiene, including breast feeding, scrupulous cleanliness at all times in the preparation and handling of food for children, and continuous attention to diet in order to avoid minor digestive disturbances that may lower resistance to the infection will do much toward accomplishing this aim. As a precautionary measure, all cases of infantile diarrhea should be regarded as bacillary dysentery. Prevention of epidemics of bacillary dysentery by guarding against massive dissemination of infection should be a major concern, particularly in prisons, camps, and institutions.

### Encephalitis, Infectious (Lethargic and Nonlethargic)

1. **Recognition of the disease.**—Largely clinical. At least 4 forms occur in the United States: the Vienna type (originally called lethargic von Economo, later called type A), the St. Louis type, the Eastern equine type, and the Western equine type. The last three resemble each other and the Japanese type B (which is not known to occur in the United States) more than any of them resemble the Vienna type. The Vienna type is the most chronic and variable in course, often with a mild febrile onset, later with symptoms of brain or nerve involvement, such as slight meningeal irritation, somnolence, diplopia or evident paralysis of eye muscles, insomnia, restlessness, twitching, myoclonia, catatonia, with or without fever; and still later at times, slow, semirigid movements, coarse tremor, masklike expression or other disturbances of motility, psychic or behavior disturbances, often with exacerbations and remissions over several years. Though an individual case of the St. Louis type may be indistinguishable from the Vienna type, in the St. Louis type the onset is usually more abrupt as to fever and headache, with drowsiness rather than deep sleep, disorientation, motor disturbances, but very infrequent paralysis of the eye muscles, meningeal irritation

with an increase of cells in the spinal fluid more uniformly than in the Vienna type, and usually complete and fairly prompt recovery in the nonfatal cases. All ages are attacked in all four types, children and young adults more frequently in the Vienna and Western equine types, the older ages in the St. Louis (and Japanese B) types, very young children in the Eastern equine type. The Western equine type is somewhat similar clinically to the St. Louis type, while the Eastern equine type has been a more severe and fatal disease in humans and is likely to leave nervous and mental sequellae in the patients who survive. These forms of encephalitis are to be distinguished from post- or para-infectious encephalitis which follows or accompanies such infections as measles, vaccinia, and chickenpox, by the history of the other infection immediately preceding.

2. **Etiological agent.**—Probably a virus for the Vienna type; a specific filterable virus for each of the other types.
3. **Source of infection.**—Unknown. Birds are a probable reservoir of infection for the Eastern equine type.
4. **Mode of transmission.**—In the case of the equine types of encephalitis several species of the *Aedes* mosquito have been shown to be capable of transmitting the virus under laboratory conditions.
5. **Incubation period.**—Four to twenty-one days for the St. Louis type.
6. **Period of communicability.**—Unknown.
7. **Susceptibility and immunity.**—Natural immunity or immunity resulting from an attack are assumed to occur, but have not been proved except by the ability of the blood serum to neutralize viruses of the St. Louis, and Eastern and Western equine types.
8. **Prevalence.**—The Vienna type was first distinctly recognized in 1917, but had occurred before, and has since been prevalent in many parts of the world, especially from 1920 to 1926, infrequently now. The St. Louis type was especially prevalent in the St. Louis area in 1933, where there was an incidence of 100 per 100,000 population, but this type has occurred elsewhere before and since. The Vienna type occurs at all seasons of the year but more frequently in late winter and spring. The other types occur notably in late summer and fall outbreaks.
9. **Methods of control:**
  - A. The infected individual, contacts, and environment:
    1. Recognition of the disease and reporting: Clinical symptoms, assisted by microscopical and chemical examination of the spinal fluid if lumbar puncture is performed. Virus has been isolated from the brain tissue of fatal cases of all types except the Vienna type. Development of specific neutralizing power in the blood serum of patients may be an aid to identification of the type if suitable laboratory facilities are available.
    2. Isolation: For 1 week after onset.
    3. Concurrent disinfection: Discharges from the nose, throat, and bowel, and articles soiled therewith.
    4. Terminal disinfection: None.
    5. Quarantine: None.
    6. Immunization: None.
    7. Investigation of source of infection: Search for prior cases in the community and for unreported cases among the associates of the patient may develop useful epidemiological in-

formation, but so far has been of no practical value in control of the different types of this disease.

- B. General measures: Mosquito control if practicable. *Aedes vexans*, which has been suspected in the spread of the Eastern equine virus to human cases, would usually be difficult to control.

### Favus

1. **Recognition of the disease.**—A parasitic fungus disease of the skin, usually on the scalp, marked by cup-shaped yellowish crusts covering the hair follicles.
2. **Etiological agent.**—*Trichophyton schoenleini* (*Achorion schoenleini*).
3. **Source of infection.**—Lesions of skin, particularly on scalp, rarely on nails.
4. **Mode of transmission.**—Direct contact with patients, and indirectly through toilet articles.
5. **Incubation period.**—Unknown.
6. **Period of communicability.**—Until skin and scalp lesions are all healed as shown by absence of scaling and erythema, to be confirmed by microscopic examination, culture, and absence of fluorescence under a suitable ultraviolet light.
7. **Susceptibility and immunity.**—Infection by this fungus is frequent with the presence of another patient in the family, and with neglect of personal cleanliness.
8. **Prevalence.**—Rare in children in North America, and when occurring can usually be traced to immigrants from southern and eastern Europe.
9. **Methods of control:**
  - A. The infected individual, contacts, and environment:
    1. Recognition of the disease and reporting: Clinical symptoms confirmed by microscopic examination of crusts, and cultures on Sabouraud's medium.
    2. Isolation: Exclusion of patient from school and other public places until lesions are healed. Patient should wear a light, tight-fitting cotton skull cap constantly. This must be changed frequently and boiled.
    3. Concurrent disinfection: Toilet articles of patient.
    4. Terminal disinfection: None.
    5. Quarantine: None.
    6. Immunization: None.
    7. Investigation of source of infection: Search for unreported and unsuspected cases among immediate home or play or work associates of the patient.
  - B. General measures:
    1. Elimination of common utensils, such as hair brushes and combs.
    2. Provision for adequate and intensive treatment and cure of cases of favus at hospital and dispensaries, to abbreviate the period of infectivity of the patient.

### German Measles (Rubella)\*

1. **Recognition of the disease.**—A febrile infection occurring frequently in epidemics, characterized by a polymorphous rash, sometimes resembling that of measles, sometimes that of scarlet fever, and

\*The reason for notification of this disease is that it may be confused with scarlet fever during its early stages; each person having symptoms of the disease should therefore be placed under the care of a physician and the case should be reported to the local department of health.



sometimes of both at the same time; few or no constitutional symptoms but almost always enlargement of post-auricular, sub-occipital and cervical, and occasionally of other, lymph nodes. Usually absence of leukocytosis.

2. **Etiological agent.**—Unknown.
3. **Source of infection.**—Secretions of the mouth and possibly of the nose.
4. **Mode of transmission.**—By direct contact with the patient or with articles freshly soiled with the discharges from the nose or throat of the patient.
5. **Incubation period.**—From 14 to 21 days; usually about 16 days.
6. **Period of communicability.**—From onset of catarrhal symptoms for at least 4 days, but not more than 7; the exact period is undetermined. Highly communicable.
7. **Susceptibility and immunity.**—Susceptibility is general among young children. An attack usually confers permanent immunity.
8. **Prevalence.**—Epidemic in expression, occurring mostly in childhood, but more in adults than is the case with measles. Commoner in urban than in rural communities, and oftener in winter and spring than at other seasons.
9. **Methods of control:**
  - A. The infected individual, contacts, and environment:
    1. Recognition of the disease and reporting: See note below.
    2. Isolation: Of no practical value.
    3. Concurrent disinfection: None.
    4. Terminal disinfection: None.
    5. Quarantine: None.
    6. Immunization: None.
    7. Investigation of source of infection: Of no importance except to clarify doubts created by clinical difficulty in distinguishing this disease from scarlet fever in its early stages.
  - B. General measures: None.

### Glanders\*

1. **Recognition of the disease.**—Occurs in two forms, one external affecting the skin and known as "farcy," and an internal form known as "glanders." It may appear as an acute or chronic disease, with widely variable symptoms, the diagnosis being established by one or other of the following biological reactions: The complement fixation test, the mallein test, the agglutination test, or by non-specific reactions, such as the Straus reaction, if confirmed by culture and identification of the *Malleomyces mallei*, or by autopsy where diagnosis has been uncertain at time of death.
2. **Etiological agent.**—Glanders bacillus. *Malleomyces mallei* (*Bacillus mallei*).
3. **Source of infection.**—Discharges from open lesions of mucous membranes, or of the skin of human or equine cases of the disease (i.e., pus and mucus from the nose, throat, and bowel discharges from infected man and horse).

\*In this disease, as in all infections or communicable diseases from which both animals and humans suffer, cases occurring in animals should be reported to the Department of Agriculture or livestock sanitary authority, and human cases should be reported to the Department of Health, reciprocal notification thereafter to be accomplished through official interdepartmental channels.



4. **Mode of transmission.**—Contact with a case or with articles freshly soiled by discharges from a human or equine case.
5. **Incubation period.**—Undetermined; usually 1 to 5 days.
6. **Period of communicability.**—Until bacilli disappear from discharges or until lesions have healed.
7. **Susceptibility and immunity.**—Susceptibility appears to be common. Immunity is believed to follow recovery from the infection.
8. **Prevalence.**—Rare and sporadic and almost exclusively in men occupied about horses. In widespread and local epidemics as an epizootic in horses.

9. **Methods of control:**

A. The infected individual, contacts, and environment:

1. Recognition of the disease and reporting.
2. Isolation: Human case at home or hospital; for infected horses destruction rather than isolation is advised. **Skin contact with the lesions in the living or dead body is to be scrupulously avoided.**
3. Concurrent disinfection: Discharges from human cases and articles soiled therewith.
4. Terminal disinfection: Stables and contents where infected horses are found.
5. Quarantine of all horses in an infected stable until all have been tested by specific reaction, and the removal of infected horses and terminal disinfection of stable have been accomplished.
6. Immunization: None of established value or generally accepted.
7. Investigation of source of infection: Carriers not known in humans. Search for infected horses especially in sales stables, by observation and specific laboratory tests.

B. General measures:

1. The abolition of the common drinking trough for horses.
2. Sanitary supervision of stables and blacksmith shops.
3. Semiannual testing of all horses by a specific reaction where the disease is common.
4. Testing of all horses offered for sale where the disease is common

### Gonorrhea

1. **Recognition of the disease.**—Occurring initially as an infection of one of the mucous membranes, most frequently of the genital tract, urethra in both sexes, the vaginal or uterine mucosa in the female, the disease develops as an acute or chronic process in adjacent or remote tissues, among the latter especially as arthritis and endocarditis. Relapsing and chronic inflammatory discharging conditions at the site of original attack are common. Demonstration of the etiological agent in the lesions or discharges is the best and only certain diagnostic procedure.
2. **Etiological agent.**—Gonococcus, *Neisseria gonorrhoeae*.
3. **Source of infection.**—Discharges from lesion of inflamed mucous membranes and glands of infected persons, viz, urethral, vaginal, cervical, conjunctival mucous membranes, and Bartholin's or Skene's glands in the female, and Cowper's and the prostate glands in the male.

4. **Mode of transmission.**—By direct personal contact with infected persons, and indirectly by contact with articles freshly soiled with the discharges of such persons. In adults by sexual intercourse; in children by other personal and indirect contact with discharges.
5. **Incubation period.**—One to 8 days, usually 3 to 5 days.
6. **Period of communicability.**—As long as the gonococcus persists in any of the discharges, whether the infection be an old or a recent one. Readily communicated in sexual intercourse.
7. **Susceptibility and immunity.**—Susceptibility appears to be general. Acquired immunity does not occur generally, but some degree of transient local immunity may appear during infection. One attack does not protect against subsequent infection.
8. **Prevalence.**—Widespread in both sexes and at all ages, but most common among men from 18 to 40 years of age and among women at a little earlier age. Endemic, sporadic, and epidemic.
9. **Methods of control:**
  - A. The infected individual, contacts, and environment:
    1. Recognition of the disease and reporting: Clinical symptoms, confirmed by bacteriological examination or serum reaction.
    2. Isolation: When the lesions are in the genitourinary tract, exclusion from sexual contact, and when the lesions are conjunctival, exclusion from school or contact with children, as long as the discharges contain the gonococcus.
    3. Concurrent disinfection: Discharges from lesions and articles soiled therewith.
    4. Terminal disinfection: None.
    5. Quarantine: None.
    6. Immunization: None.
    7. Investigation of source of infection: Each acute case should be traced to probable source of infection and appropriate control and treatment of this spreader of disease instituted. Infected persons may become carriers for periods not yet determined with certainty, but occasionally for a year or more.
  - B. General measures:
    1. Provision of accurate and early diagnosis and careful treatment of infected persons with an appropriate chemotherapeutic agent such as sulfapyridine or sulfathiazole. Search should be made for all recent contacts with infected patients and provision made for following all cases until acute manifestations have subsided.
    2. Education in matters of sexual hygiene, particularly as to the fact that continence in both sexes at all ages is compatible with health and normal development.
    3. Repression of commercialized prostitution, and associated use of alcoholic beverages, by police or other competent authority.
    4. Restriction of advertising of services and medicines for the self-treatment of sex diseases, etc.
    5. Elimination of common towels and toilet articles from public places.
    6. Use of prophylactic silver solution in the eyes of the newborn.
    7. Personal prophylaxis should be advised and made available for use before or immediately after sexual intercourse to those who expose themselves to infection.
    8. Exclusions of persons in the communicable stage of the disease from occupations involving contact with children.

### Hookworm Disease (Ancylostomiasis)

1. **Recognition of the disease.**—The symptomatology varies greatly in accordance with the degree of infection and other factors. The presence of only a few worms may give rise to no symptoms. Moderate to severe infections may be characterized by abdominal pain, indigestion, flatulence, abnormal or depraved appetite, and distended abdomen. Some cases show severe diarrhea; others may have alternate constipation and diarrhea. The skin is sallow, dry, and harsh. The patient is depressed and listless, and the features expressionless. Children may show marked physical and mental retardation. Severe secondary anemia may be present and there is usually an eosinophilia. In severe cases, there is frequently edema in various parts of the body, particularly in the dependent portions. Dermatitis or so-called "ground-itch" may be present on the feet or other parts of the body coming in contact with contaminated soil. Systemic symptoms are usually more pronounced in patients on an inadequate or unbalanced diet and those suffering concomitantly from malaria and other debilitating conditions. Diagnosis is established by finding hookworm ova in the stools.
2. **Etiological agent.**—In the continental United States, *Necator americanus*, rarely *Ancylostoma duodenale*.
3. **Source of infection.**—Usually soil contaminated with infective larvae from ova in stools deposited by infected persons. Larvae usually penetrate through the skin, although infection can take place by mouth.
4. **Mode of transmission.**—The infective or third-stage larvae penetrate the skin, usually of the foot, and pass via the lymphatics to the inferior vena cava and the right heart, thence in the blood stream to the lungs, where they pierce the capillary walls and pass into the alveoli. They then pass up the bronchi and trachea to the throat, whence they are swallowed and finally reach the small intestine, where they develop to maturity. Infection can take place by mouth from water, soil, or contaminated objects harboring infective larvae; however, the chief mode of infection is through the skin.
5. **Incubation period.**—No incubation period occurs comparable to that observed in bacterial and virus infections. Onset of symptoms varies widely in time, according to the intensity of the infection, from 2 to 3 weeks in massive infections (commonly 7 to 10 weeks), to many months or even years where infection or reinfection is by small numbers of worms. The free living form may exist in the soil under favorable conditions for several weeks. Eggs are found in the stools in about 4 to 6 weeks after the larvae penetrate the skin, and develop the next generation of larvae 5 to 8 days after being deposited on soil, under favorable conditions.
6. **Period of communicability.**—Infected individuals remain potential spreaders of infection as long as they remain infected and continue to pollute soil. Third-stage larvae may remain alive in soil for several weeks under favorable conditions.
7. **Susceptibility and immunity.**—Susceptibility to infection is universal. In general adults are less frequently infected than children, and Negroes less frequently than whites. Some degree of immunity is developed by a person who has had an infection.
8. **Prevalence.**—Widely endemic in areas having favorable soil, moisture and temperature for development, and where winter temperatures



are not sufficiently low to destroy larvae in soil. Occurs in the southern United States as far north as Kentucky; particularly prevalent in the sandy plain of the Atlantic Coast and Gulf States. Both incidence and intensity of infection have decreased during the last 25 years but the disease is still a serious problem in some parts of the continental United States and in Puerto Rico.

## 9. Methods of control:

### A. The infected individual, contacts, and environment:

1. Recognition of the disease and reporting: Microscopic examination of bowel discharges.
2. Isolation: None.
3. Concurrent disinfection: Sanitary disposal of bowel discharges to prevent contamination of soil and water.
4. Terminal disinfection: None.
5. Quarantine: None.
6. Immunization: None.
7. Investigation of source of infection: Each case and carrier is a potential or actual spreader of the disease. All family contacts should be examined.
8. Treatment: For the removal of worms from the intestinal tract appropriate treatment of clinical cases with tetrachlorethylene, hexylresorcinol, or carbon tetrachloride, with preference in the order named.

### B. General measures:

1. Education as to dangers of soil pollution and methods of prevention.
2. Prevention of soil pollution by installation of sanitary disposal for human discharges, especially sanitary privies in rural areas, and education of the public in the use of such facilities.
3. Personal prophylaxis by cleanliness and the wearing of shoes.

## Influenza

1. **Recognition of the disease.**—Whether occurring in a pandemic, in endemic-epidemic incidence, or as sporadic cases, this disease is characterized in its typical form by sudden onset, fever of 1 to 7 days' duration, accompanied by excessive prostration, aches and pains in back and limbs, coryza, sore throat, and bronchitis, and not uncommonly by pneumonia as a complication. During epidemics when such cases occur in large numbers and over a wide area, other cases of less distinctive type are found to be epidemiologically related to typical cases, and in these the diagnosis would not be made without such obvious association. The clinical criteria of influenza are quite indefinite, particularly in absence of widespread prevalence of the disease. Microscopic or other laboratory procedures are of no practical value in determining or excluding the diagnosis of influenza.
2. **Etiological agent.**—A filterable virus has been isolated in certain epidemics.
3. **Source of infection.**—Probably discharges from the mouth and nose of infected persons and articles freshly soiled by such discharges.
4. **Mode of transmission.**—Believed to be by direct contact, by droplet infection, or by articles freshly soiled with discharges of the nose and throat of infected persons.
5. **Incubation Period.**—Short, usually 24 to 72 hours.
6. **Period of communicability.**—Undetermined; possibly in prodromal as well as in the febrile stage and convalescent stages.



7. **Susceptibility and immunity.**—Susceptibility is general, although natural resistance or relative immunity appears to protect from one-quarter to three-quarters of persons intimately exposed to the disease even during widespread epidemics. Acquired immunity resulting from an attack of and recovery from the disease is of short duration (a few months to a year) perhaps effective only against a certain strain or strains of the virus.
8. **Prevalence.**—Uncertain in pandemic, local epidemic, and sporadic occurrence, by reason of indefinite clinical symptoms. In epidemics may affect up to 50 percent of the population. Occurs pandemically in cycles with intervals of several decades.
9. **Methods of control:**
  - A. The infected individual, contacts and environment:
    1. Recognition of the disease and reporting: By clinical symptoms only. Uncertain in interepidemic periods.
    2. Isolation: During acute stage of the disease, especially in severe cases and those complicated by pneumonia.
    3. Concurrent disinfection: Discharges from the nose and throat of the patient.
    4. Terminal disinfection: None.
    5. Quarantine: None, but visiting the patient should be discouraged.
    6. Immunization: None.
    7. Investigation of source of infection: Of no practical value.
  - B. General measures:
    1. During epidemics efforts should be made to reduce opportunities for direct contact infection, as in crowded halls, stores, and street cars. Kissing, the use of common towels, glasses, eating utensils, or toilet articles should be avoided. In isolated towns and institutions infection has been delayed and sometimes avoided by strict exclusion of visitors from already infected communities. The closing of the public, parochial, and private schools has not been effective in checking the spread of infection. The judicious use of masks by nurses and other attendants may prove of value in preventing infection in hospitals. Scrupulous cleanliness of dishes and utensils used in preparing and serving food in public eating places should be required, including the subsection of such articles to disinfection in hot soapsuds. In groups which can be brought under daily professional inspection, the isolation of early and suspicious cases of respiratory tract inflammation, particularly when accompanied by a rise in temperature, may delay the spread of the disease. To minimize the severity of the disease, and to protect the patient from secondary infections and thus reduce mortality, patients should go to bed at the beginning of an attack, and not return to work without the approval of their physician. Appropriate chemotherapy should be instituted at once if evidence of secondary pneumonia appears.
    2. Large aggregation of young adults unaccustomed to such association create a danger of spread of influenza when it is prevalent, especially when the individuals are subjected to chilling, much fatigue, or deprivation of customary bodily comforts.
    3. Crowding of beds in hospitals and institutions to accommodate increased numbers of patients and other inmates is to be especially avoided. Increased spacing between beds in wards and dormitories should be carried out to reduce the risk of attack, and of the occurrence of pneumonia.

### Leprosy

1. **Recognition of the disease.**—The disease is to be identified by lesions of the skin and mucous membranes and by neurological manifestations. Confirmation by microscopic examination is usually possible in cutaneous and mixed types of the disease but may be difficult or impossible in maculo-anesthetic and neural cases.
2. **Etiological agent.**—Leprosy bacillus, *Mycobacterium leprae*.
3. **Source of infection.**—Discharges from lesions.
4. **Mode of transmission.**—Intimate and prolonged contact with infected individuals and some other as yet undetermined factor are apparently necessary.
5. **Incubation period.**—Prolonged, undetermined, from 1 to several years.
6. **Period of Communicability.**—Commences when lesion becomes open, i. e., discharges leprosy bacilli; continues until healing. Patients with demonstrable acid-fast bacilli in smears from skin or mucous membranes are potentially "open" cases even if demonstrable ulceration be not present. Communicable only in certain geographic areas; in continental United States notably in States bordering on the Gulf of Mexico.
7. **Susceptibility and immunity.**—Susceptibility uncertain; no racial immunity.
8. **Prevalence.**—Endemic in some Gulf coast areas, Hawaii, Philippines, and Puerto Rico. Sporadic in North America and rare. Oftener among adolescent and young adult males.
9. **Methods of control:**
  - A. The infected individual, contacts, and environment:
    1. Recognition of the disease and reporting: Clinical symptoms confirmed by microscopic examination where possible.
    2. Isolation: Isolation of bacteriologically positive cases occurring in endemic form in national leprosarium until a condition of apparent arrest has been present for at least 6 months, as determined by clinical observation and absence of acid-fast bacilli on repeated examinations. Paroled and other negative patients should be reexamined periodically, the suggested interval being 6 months.
    3. Concurrent disinfection: Discharges and articles soiled with discharges.
    4. Terminal disinfection: Thorough cleaning of living premises of patient.
    5. Quarantine: None.
    6. Immunization: None.
    7. Investigation of source of infection: This should be undertaken especially in cases of apparently recent origin. The long and uncertain period of incubation, and the length of intimate contact believed to be necessary, make the discovery of the source of infection a matter of great difficulty.
  - B. General measures:
    1. In endemic areas leprosy is usually contracted in childhood but it may be acquired in adult life. Infants should be separated from leprosy parents at birth, and in educational efforts stress should be placed upon the greater risk of exposure in early life.
    2. Lack of information as to the determining factors in the spread and communication of the disease makes any but general advice in matters of personal hygiene of no value.

3. As a temporary expedient, patients may be properly cared for in general hospitals, or if conditions of the patient and his environment warrant, he may be allowed to remain on his own premises under suitable regulations.
4. In those parts of the United States in the temperate zone farther north where the disease shows no tendency to spread, suitable medical and nursing care of infected persons is sufficient.

### Malaria

1. **Recognition of the disease.**—A group of specific infectious fevers due to invasion of the red blood cells by one of at least three types of Sporozoa of the genus *Plasmodium*. These fevers occur endemically or epidemically and are associated with a symptom complex fairly characteristic of each variety, marked particularly by periodicity of fever and symptoms due to the growth and development of the organism. Enlargement of the spleen, secondary anemia, and the characteristic recurrence of chills and fever as clinical findings are confirmed by observing presence of the malaria parasites in blood film on microscopic examination. Mosquitoes of the anopheline family are the only known vectors.
2. **Etiological agent.**—The several species of micro-organisms: *Plasmodium vivax* (tertian), *Plasmodium malariae* (quartan), *Plasmodium falciparum* (estivo-autumnal).
3. **Source of infection.**—The blood of an infected individual.
4. **Mode of transmission.**—By bite of the infected *Anopheles* mosquitoes. The mosquito is infected by biting an individual suffering from acute or chronic malaria. The parasite develops in the body of the mosquito for from 10 to 14 days (21 days for quartan), after which time the sporozoites appear in its salivary glands. The disease may be transmitted by blood transfusion or by injecting whole human blood; also by common use of unsterilized hypodermic syringe (as by drug addicts).
5. **Incubation period.**—Varies with the type of species of infecting micro-organism and the amount of infection, usually 14 days in the tertian variety.
6. **Period of communicability.**—As long as the sexual form of the malaria micro-organism exists in the circulating blood in sufficient quantities to infect mosquitoes. In untreated cases this may last for months.
7. **Susceptibility and immunity.**—Susceptibility is universal, although the symptoms of an attack in a Negro are usually less severe than in a white person. Some relative immunity appears to follow repeated attacks of the disease, presumably because the immunity finally covers all of the local strains of the species involved; these attacks confer no immunity to infection with another species of plasmodium, and only slight immunity to a newly introduced strain of the same species. A state of good nutrition is believed to be a factor in maintaining resistance to the disease and in spontaneous recovery.
8. **Prevalence.**—Endemic and sporadic, more frequent among children than adults, among Negro children more than among white children. Particularly prevalent in the southeast coastal plain, Mississippi Valley south of St. Louis, in eastern Texas and Oklahoma,



central New Mexico, in Louisiana and Arkansas, and slightly in California and Oregon. Serious in Puerto Rico and the Philippines. Seasonal occurrence of tertian type in early summer, estivo-autumnal and tertian in early fall. Usually rises to a sharp peak about every seven years and slowly but progressively falls thereafter. Epidemic outbreaks more common during peak years. The disease accompanies newly impounded waters in the Mississippi Valley and Atlantic seaboard.

## 9. Methods of control:

### A. The infected individual and environment:

1. Recognition of the disease and reporting: Clinical symptoms, always to be confirmed by microscopical examination of the blood. Repeated examination of blood films may be necessary.
2. Isolation: The individual with malarial parasites in his blood should be protected from the bites of mosquitoes. With the exception of this simple precaution, isolation and quarantine are of no avail.
3. Concurrent disinfection: None. Destruction of *Anopheles* mosquitoes in the dwelling.
4. Terminal disinfection: None. Destruction of *Anopheles* mosquitoes in the dwelling.
5. Quarantine: None.
6. Immunization: None. The administration of prophylactic doses of quinine or atabrine should be insisted on for visitors constantly exposed to infection and unable to protect themselves against *Anopheles* mosquitoes. This is not in an exact sense prophylaxis but early therapeutics.
7. Specific therapy: Quinine sulfate is preferred for routine treatment and atabrine is found by some to be equally reliable. Small daily doses of plasmochin appear to lower the relapse rate.
8. Investigation of source of infection: Breeding places and house infestation by *Anopheles* mosquitoes should be sought for and larvae and mosquitoes destroyed when and where possible. Dissection of house-caught mosquitoes reveals which of the species found is the important vector. The breeding places of this particular species should be located and its reproduction prevented.

### B. General measures:

1. Employment of known measures for destroying larvae of anophelines and the eradication of breeding places of such mosquitoes.
2. Blood examination of persons living in infected centers to determine the incidence of infection.
3. Screening sleeping and living quarters; use of mosquito nets.
4. Killing mosquitoes in living quarters.
5. Education of the public as to the mode of spread and methods of prevention of malaria.
6. Adequate curative treatment of persons with clinical attacks of malaria.

## Measles (Rubeola)

1. Recognition of the disease.—Clinical characteristics are fever, catarrhal symptoms in eyes and nose and throat in the prodromal stage, as well as the height of the disease, an early eruption in the mouth, Koplik spots, later an exanthem and enanthem, and a branny desquamation during convalescence. When the disease is prevalent, or a susceptible child has been exposed to a case of measles, the



diagnosis should be suspected on appearance of the fever and catarrhal symptoms, without waiting for confirmatory eruptions, and isolation precautions should be instituted at once.

2. **Etiological agent.**—A specific filterable virus.
3. **Source of infection.**—Buccal and nasal secretions of an infected individual.
4. **Mode of transmission.**—Directly from person to person; indirectly through articles freshly soiled with the buccal and nasal discharges of an infected individual. The most easily transmitted of the communicable diseases.
5. **Incubation period.**—About 10 days from date of exposure to onset of fever; 13 to 15 days to appearance of rash; uncommonly longer or shorter. When convalescent serum has been used, but too late to prevent infection, the incubation period may be as long as 21 days.
6. **Period of communicability.**—During the period of catarrhal symptoms and until the cessation of abnormal mucous membrane secretions; minimum period of 9 days from 4 days before to 5 days after the appearance of the rash.
7. **Susceptibility and immunity.**—All persons must be considered susceptible until they have had the disease, except that most babies born of mothers who have had the disease are immune for the first few months of life. Natural immunity may last into adult life in rare instances. Permanent acquired immunity is usual after recovery from an attack. Passive immunity may be established for a few weeks, but not more than 4, by the use of 4 to 10 cc. of convalescent measles serum or 20 to 50 cc. of whole blood of immunes, or if citrated blood is used, 25 to 60 cc. Serum of immunes may be concentrated, or immune globulin may be used.
8. **Prevalence.**—Universal. Probably 80 to 90 percent of all persons surviving to the twentieth year of life have had an attack, and rarely does a person go through life without having had measles. Occurs most commonly in children between 5 and 14 years of age, but many cases are in children under 5. Endemic in large population units. In remote or insular groups epidemics occur on contact with a case in a visitor. Highest incidence from March to June in North America. Frequency of epidemics depends on size of community or proximity to a large center, amount of communication between large and small population groups, accretion of population by births, and other less exactly determined factors. Much more likely to result in death from complicating pneumonia in children under 2 than at higher ages.
9. **Methods of control:**
  - A. The infected individual, contacts, and environment:
    1. Recognition of the disease and reporting: Clinical symptoms. Special attention to rise of temperature, Koplik spots and catarrhal symptoms in exposed individuals.
    2. Isolation: During period of communicability for the sake of the patient as well as others.
    3. Concurrent disinfection: All articles soiled with the secretions of the nose and throat.
    4. Terminal disinfection: Thorough cleaning.
    5. Quarantine: When the disease is very prevalent and in large communities, quarantine of exposed susceptible children is impracticable and of no value. Exclusion of exposed sus-

ceptible school children and teachers from school until 14 days from last exposure may be justifiable under sparsely settled rural conditions. This applies to exposure in the household. Exclusion of exposed susceptible children from all public gatherings under the same conditions for the same period. If the date of only exposure is reasonably certain, an exposed susceptible child of school age may be allowed to attend school for the first 7 days of the incubation period. Quarantining of institutions of young children and of wards or dormitories where exposure is suspected is of value. Strict quarantine wards of infants if a case occurs in an institution is important.

6. Immunization: By the use of the serum or whole blood of convalescent patients, or of any healthy adults who have had measles, or by the use of immune globulin, given within 5 days after first exposure to a known case of measles, the attack in the exposed person may be averted in a considerable percentage of instances; if not averted, the disease may be modified. Given later, but a time prior to the clinical onset of the disease, convalescent serum usually modifies the severity of the attack and the patient probably acquires the usual lasting immunity to the disease.
7. Investigation of source of infection: Search for exposed susceptible children under 3 years of age is profitable. Carriers are not known to occur. Every effort should be made to have all cases reported early in the disease by the physician, or, if there is none in attendance, by parent or guardian. The chief object of discovering cases is to give all possible protection to the very young or debilitated against infection, to administer passive immunization if practicable, and to secure adequate medical care for those infected.

#### B. General measures:

1. Daily examination of exposed children and of other possibly exposed persons. This examination should include record of the body temperature. A nonimmune exposed individual exhibiting a rise of temperature of  $0.5^{\circ}$  C. or more should be promptly isolated pending diagnosis.
2. Schools should not be closed or classes discontinued, but daily observation of the children by physician and nurse should be provided for.
3. Education as to special danger of exposing young children to those exhibiting fever and acute catarrhal symptoms of any kind particularly during years and seasons of epidemic prevalence of measles.
4. In institutional outbreaks, immunization with convalescent serum of all minor inmates who have not had measles is of value in checking the spread of infection and in reducing mortality. No new admissions and no visitors under 16 years of age should be permitted in an institution for children, during a measles outbreak in the community or in the institution.
5. The immunization of infants and children under 3 years of age with convalescent serum or whole adult blood in families where cases of measles occur in older children or adults should be encouraged by the department of health and by private physicians.

#### Meningococcus Meningitis (Cerebrospinal Fever)

1. Recognition of the disease.—An acute infectious disease with sudden onset, fever, headache, nausea, rigidity of neck, and in epidemics not infrequently petechial spots on the skin. The specific micro-

organism in one of its several types may in some cases be found in the early stages by blood culture, and usually during the course of the disease in the spinal fluid, and in the discharges of the retro-nasal surfaces. The disease occurs in epidemic and sporadic manner.

2. **Etiological agent.**—*Meningococcus, Neisseria intracellularis.*
3. **Source of infection.**—Discharges from the nose and mouth of infected persons. Clinically recovered cases, and healthy persons not known to have had the disease but recently in contact with cases or other carriers, may act as carriers and are commonly found, especially during epidemics. Such healthy carriers are found independent of epidemic prevalence of the disease, even up to 5 to 10 percent of a general population.
4. **Mode of transmission.**—By direct contact with infected persons and carriers and indirectly by contact with articles freshly soiled with the nasal and mouth discharges of such persons.
5. **Incubation period.**—Two to ten days, commonly seven; tends to be short in epidemics; in rare instances the period may be longer when a carrier develops the disease.
6. **Period of communicability.**—During the clinical course of the disease and until the specific micro-organism is no longer present in the nasal and mouth discharges of the patient. The same applies to healthy carriers as far as persistence of infectious discharges is concerned. Readily communicable in crowded living conditions among persons of lowered resistance.
7. **Susceptibility and immunity.**—Susceptibility is limited. Acquired immunity from having had the disease, apart from immediate clinical relapses, may be of long duration but is uncertain. There is no artificial immunity. Resistance to infection appears to be low when those exposed to crowded conditions of living are also fatigued and ill fed.
8. **Prevalence.**—Usually low incidence of sporadic cases. Within a community in epidemics at long but irregular intervals. The cases are mostly in children and in young adults, but occur at all ages. Local epidemics commonly related to chronic or emergency overcrowding of living quarters, as in ships, barracks, and lodging houses or slums, and usually in the winter or spring. No limitations in geographical distribution.
9. **Methods of control:**
  - A. The infected individual, contacts and environment:
    1. Recognition of the disease and reporting: Clinical symptoms confirmed by the microscopic and bacteriological examination of the spinal fluid, and by the bacteriological examination of nasal and pharyngeal secretions.
    2. Isolation of infected persons until 14 days after onset of the disease or until negative swabs are obtained from the naso-pharynx.
    3. Concurrent disinfection: Of discharges from the nose and mouth or articles soiled therewith.
    4. Terminal disinfection: Cleaning.
    5. Quarantine: None.
    6. Immunization: None.
    7. Investigation of source of infection: Impracticable.
    8. Prompt treatment with an appropriate chemotherapeutic agent such as sulfathiazole or sulfanilamide, or a combina-

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tion of serotherapy and chemotherapy, may be useful in limiting communicability.

**B. General measures:**

1. Education as to personal cleanliness and necessity of avoiding contact and droplet infection.
2. Prevention of overcrowding such as is common in living quarters, transportation conveyances, working places, and especially in barracks, camps, and ships.

**C. Epidemic measures:**

1. Increase the separation of individuals and the ventilation in living and sleeping quarters for such groups of people as are especially exposed to infection because of their occupation or some necessity of living conditions. Chilling, bodily fatigue, and strain should be minimized for those especially exposed to infection.

**Mumps (Infectious Parotitis)**

1. **Recognition of the disease.**—An acute specific infection characterized by fever, swelling, and in tenderness of the salivary glands usually of the parotid, sometimes of the sublingual or submaxillary glands. Involvement of ovaries and testicles is most frequent in persons over puberty; rarely, involvement of the central nervous system is encountered early or later in the course of the disease.
2. **Etiological agent.**—A specific filterable virus.
3. **Source of infection.**—Secretions of the mouth and possibly of the nose.
4. **Mode of transmission.**—By direct contact with an infected person or with articles freshly soiled with the discharges from the nose and throat of such infected persons.
5. **Incubation periods.**—From 12 to 26 days. The most common period 18 days, accepted as usual. A period of 21 days is not uncommon.
6. **Period of communicability.**—Limits not definitely established, but probably beginning at least 1 to 2 days before development of distinctive symptoms and persisting no longer than the swelling of a salivary gland.
7. **Susceptibility and immunity.**—Susceptibility believed to be general. Immunity follows an attack but second attacks of the disease are not rare. Brief passive immunity may follow inoculation with convalescent serum or whole blood.
8. **Prevalence.**—This disease is decidedly less prevalent than the other common communicable diseases of childhood such as measles, whooping cough, and chickenpox. Winter and spring are the seasons of greatest prevalence. Its occurrence is sporadic and epidemic except in large cities, where it is endemic. Close aggregations of young people favor outbreaks.
9. **Methods of control:**
  - A. The infected individual, contacts, and environment: The following procedures are in common use but cannot be relied upon as means of effective control of the disease.
    1. Recognition of the disease and reporting: The diagnosis is usually made on swelling of the parotid gland.
    2. Isolation: Separation of the patient from nonimmune children and young children and young people, and exclusion of the patient from school and public places for the period of presumed infectivity, particularly when the disease appears in children's institutions or among young recruits.



3. Concurrent disinfection: None.
4. Terminal disinfection: None.
5. Quarantine: None. Exposed susceptible persons should be regularly inspected for the presence of initial symptoms of the disease, such as fever, or swelling or pain of the parotid or submaxillary glands, for 3 weeks from the date of last exposure. Exposed children medically certified as having had the disease should not be excluded from school as susceptibles.
6. Immunization: None. Passive temporary immunity by convalescent serum or blood still in experimental stage.
7. Investigation of source of infection: Search for unreported or recent cases among associates of the patient in school or family or other group of young people. Carriers are not known to occur.

B. General measures: None.

### Paratyphoid Fever

1. **Recognition of the disease.**—A general infection with the paratyphoid bacillus characterized especially by continued fever and involvement of the lymphoid tissues of the intestines, enlargement of the spleen, and a variety of constitutional symptoms, sometimes rose spots on the trunk, usually diarrheal disturbance. The infecting micro-organism may be found in the feces, blood, and urine.<sup>7</sup>
2. **Etiological agent.**—Paratyphoid bacillus A, B, or C; *Salmonella paratyphi*, *Salmonella schoitmulieri*, *Salmonella hirschfeldii*.
3. **Source of infection.**—Bowel discharges and urine of infected persons, and water or foods contaminated with such discharges of infected persons or of healthy carriers. Healthy carriers may be numerous in an outbreak.
4. **Mode of transmission.**—Directly by personal contact; indirectly by contact with articles freshly soiled with the discharges of infected persons or through milk, water, or food contaminated by such discharges, probably by flies.
5. **Incubation period.**—Four to ten days; average, seven days.
6. **Period of communicability.**—From the appearance of prodromal symptoms, throughout the illness and relapses, during convalescence, and until repeated bacteriological examination of discharges shows absence of the infecting organism.
7. **Susceptibility and immunity.**—Susceptibility is general. Natural immunity probably exists in some adults. Acquired immunity is usually permanent after recovery from the disease. Artificial active immunity of probably 2 years' duration can be developed by the use of vaccines.
8. **Prevalence.**—Frequency has fallen with that of typhoid fever until in most parts of North America it is relatively rare, occurring sporadically or in small local carrier or contact epidemics. Probably nowhere endemic in North America.
9. **Methods of control:**
  - A. The infected individual, contacts, and environment.
    1. Recognition of the disease and reporting: Clinical symp-

<sup>7</sup>The human disease paratyphoid fever should not be confused with cases of food poisoning or with infection due to enteritidis bacilli of animal origin.

- toms confirmed by specific agglutination test, or by bacteriological examination of blood, bowel discharges, or urine.
2. Isolation: In fly-proof room, preferably under hospital conditions, of such cases as cannot command adequate sanitary environment and nursing care in their homes.
  3. Concurrent disinfection: Disinfection of all bowel and urinary discharges and articles soiled with them.
  4. Terminal disinfection: Cleaning.
  5. Quarantine: None.
  6. Immunization: Of exposed susceptibles.
  7. Investigation of source of infection: Search for common source in polluted water, milk, shellfish or other food, and individual sources as unreported cases and carriers.
- B. General measures:
1. Protection and purification of public water supplies.
  2. Pasteurization of public milk supplies.
  3. Limitation of collection and marketing of shellfish to those from approved sources.
  4. Supervision of other food supplies, and of food handlers.<sup>8</sup>
  5. Prevention of fly breeding.
  6. Sanitary disposal of human excreta.
  7. Extension of immunization by vaccination to persons especially subject to exposure by reason of occupation and travel, to those living in areas of high endemic incidence of typhoid fever, and to those for whom the procedure can be systematically and economically applied, as military forces and institutional populations, depending on prevalence of the disease.
  8. Discovery and supervision of paratyphoid carriers and their exclusion from the handling of foods.
  9. Exclusion of suspected milk supplies on epidemiological evidence pending discovery and elimination of the personal or other cause of contamination of the milk.
  10. Exclusion of suspected water supplies until adequate protection or purification is provided unless all water used for toilet, cooking, and drinking purposes is boiled before use.

### Plague, Bubonic, Septicemic, Pneumonic

1. **Recognition of the disease.**—An acute infection running a rapid severe course, often terminating fatally, and characterized by extreme weakness, high fever, buboes, severe general symptoms, and sometimes accompanied by subcutaneous hemorrhage and pustules. The infecting micro-organism is regularly found in the buboes and skin lesions, and in the pneumonic type of the disease in the sputum. Pneumonic plague gives the picture of a virulent septic pneumonia.
2. **Etiological agent.**—Plague bacillus, *Pasteurella pestis*.
3. **Source of infection.**—Blood of infected rodents and, in the pneumonic form, the sputum of human cases. The primary or indigenous source of the disease is the so-called "sylvatic plague," the animal reservoir among such rodents as the tarbigan of Manchuria, and the ground squirrel and other rodents of the United States. Infection may reach man from these sources, or more often through the medium of the rat.

<sup>8</sup>It is not assumed that an entirely effective supervision of all food handlers can be achieved or would be administratively justified by results in view of the cost. Food handlers to whom epidemiological evidence points as carriers should be brought under control of the health department.

4. **Mode of transmission.**—Direct, in the pneumonic form. In other forms the disease is generally transmitted by the bites of fleas (*Xenopsylla cheopis* and *Ceratophyllus fasciatus*), by which the disease is carried from rats to man, also by fleas from other rodents. Accidental, by inoculation.
5. **Incubation period.**—Commonly from 3 to 7 days, although occasionally prolonged to 8 or even 14 days.
6. **Period of communicability.**—Pneumonic type intensely communicable during acute symptoms. Bubonic type not communicable from person to person.
7. **Susceptibility and immunity.**—Susceptibility is general, particularly to the pneumonic form. Natural immunity may exist but is rare. Lasting immunity almost always results from recovery from an attack of the disease. Artificial passive immunity of about 3 to 4 weeks' duration by antiplague serum, and active immunity of about 6 months' duration by vaccines may be relied upon.
8. **Prevalence.**—Very rare in North America and insular possessions, and only sporadic cases, from exposure to infection in ground squirrels and other rodents in Pacific and Mountain States. Endemic in ground squirrels in large areas as far east as Montana, Utah, and New Mexico. Occasionally found in rats trapped at seaports.

## 9. Methods of control:

### A. The infected individual, contacts, and environment:

1. Recognition of the disease and reporting: Clinical symptoms, confirmed by bacteriological examination of blood, pus from glandular lesions, or sputum. Animal inoculation of material from suspected cases. Investigation of all deaths during epidemics with autopsy and laboratory examination when indicated.
2. Isolation: Patient in hospital if practicable; if not, in a screened room which is free from vermin.<sup>9</sup>
3. Concurrent disinfection: Sputum and articles soiled therewith, in pneumonic type of the disease.
4. Terminal disinfection: Thorough cleaning followed by fumigation to destroy rats and fleas. Handling of the bodies of persons dying of plague under strict antiseptic precautions.
5. Quarantine: Contact of pneumonic cases for 7 days.
6. Immunization: Ordinarily not practicable.
7. Investigation of source of infection: Search for human (in pneumonic) and rodent (in bubonic) sources to which patient is known to have been exposed, among wild rodents, and particularly the rat.

### B. General measures:

1. Extirpation of rats and vermin by use of known methods for their destruction; destruction of rats on ships arriving from infected ports; examination of rats, ground squirrels, etc., in areas where the infection persists, for evidence of endemic or epidemic prevalence of the disease among them.
2. Ratproofing of buildings and elimination of breeding places and opportunities for the harboring and feeding of rats as a fundamental sanitary measure.
3. Ratproofing of ships.

<sup>9</sup>In plague pneumonia, personal prophylaxis to avoid droplet infection must be carried out by persons who come in contact with the sick. Masks of closely woven cloth with mica windows should be worn over the head and to the shoulders. A long gown and rubber gloves drawn over the sleeves of the gown should be provided. These articles should not be removed from the sick room until disinfected.



### Pneumonia, Acute Lobar

1. **Recognition of the disease.**—An acute infection characterized by sudden onset with chill followed by fever, often pain in the chest, usually cough and dyspnea. In many cases in children, vomiting and convulsions occur at the onset. Recognition of the infecting micro-organism by microscopic and cultural examination is valuable. The X-ray may disclose pulmonary lesions prior to other evidence of pulmonary consolidation.
2. **Etiological agent.**—Various pathogenic bacteria commonly found in the nose, throat and mouth, such as pneumococcus. Friedlander's bacillus, influenza bacillus, staphylococcus, may cause lobar pneumonia. Pneumococci Types I to XXXII inclusive account for about 95 percent of the cases. *Streptococcus hemolyticus* produces an atypical pneumonia, interstitial in type, which may be confused with lobar pneumonia.
3. **Source of infection.**—Probably discharges from the mouth and nose of infected person or carrier and articles freshly soiled with such discharges.
4. **Mode of transmission.**—By direct contact with infected person or carrier, or with articles freshly soiled with the discharges of the nose and throat of such persons, and possibly from dust and minute suspended particles.
5. **Incubation period.**—Believed to be short, usually 1 to 3 days—not well determined.
6. **Period of communicability.**—Unknown; presumably until the discharges of the mouth and nose no longer carry the infectious agent in an abundant amount or in a virulent form.
7. **Susceptibility and immunity.**—Susceptibility is general, accentuated by wet and cold and exposure, and apparently under certain conditions by bodily and mental fatigue, and by alcoholism. Natural immunity may occur, but is doubtful. Acquired immunity to the particular micro-organism may follow an attack of pneumonia; such immunity is of short duration. Artificial immunization whether active or passive is of questionable value for prevention.
8. **Prevalence.**—Common, and affecting at one time or other, between adolescence and old age, a large proportion of the population. No race or color and neither sex is exempt from likelihood of having this disease. Occurs in all climates and seasons, but most often in winter and spring and in regions where cold, windy changeable, and inclement weather prevails. Occurs in epidemic form, particularly in institutions for adults.
9. **Methods of control:**
  - A. The infected individual, contacts, and environment:
    1. Recognition of the disease and reporting: Clinical symptoms. Specific infecting organisms may be determined by serological and bacteriological tests early in the course of the disease, which may give basis for epidemiological studies and for specific therapy.
    2. Isolation: Medical aseptic technique.
    3. Concurrent disinfection: Discharges from the nose and throat of the patient.
    4. Terminal disinfection: Thorough cleaning and airing.
    5. Quarantine: None.



7. Prompt treatment with an appropriate chemotherapeutic agent such as sulfapyridine or sulfathiazole, or a combination of serotherapy and chemotherapy, may be useful in limiting communicability.

**B. General measures:**

1. Whenever practicable and particularly in institutions, barracks, and on shipboard, crowding in living and sleeping places should be avoided. The general resistance should be conserved by good food, fresh air, sufficient sleep, temperance in the use of alcoholic beverages, and other hygienic measures.

### **Poliomyelitis**

1. **Recognition of the disease.**—An acute infection with moderate initial fever, usually headache and gastro-intestinal symptoms such as vomiting and constipation, drowsiness alternating with irritability, hyperesthesia, stiffness of neck and spine, usually accompanied by an increase in pressure and in the number of cells in the spinal fluid, tremor, and exaggeration of the muscular reflexes. Later, local diminution of reflexes and local motor weakness (paralytic). Any of these symptoms may be absent but the diagnosis of the cases which are not at some time paralytic is so frequently uncertain that only paralytic cases should be counted officially as poliomyelitis in comparing rates, due precautions being taken in the other cases. Paralysis may be sudden and cause death within a few hours of onset by cessation of respiration without clear-cut symptoms. There is a marked tendency for the paralysis to improve after it has reached its height.
2. **Etiological agent**—A specific filterable virus.
3. **Source of infection.**—Nose and throat discharges of infected persons and carriers, or articles recently soiled therewith. Bowel discharges also contain the virus, but reliable evidence of spread by water supply is lacking. Unpasteurized milk is a rare source of infection.
4. **Mode of transmission.**—The virus enters the brain by way of the olfactory nerves and bulb when introduced into the nose or nasopharynx of a susceptible person, presumably from a carrier in most instances.
5. **Incubation period.**—Commonly 7 to 14 days.
6. **Period of communicability.**—Not definitely known, but apparently covered by the latter part of the incubation period and the first week or two of the disease—possibly much longer in a few cases.
7. **Susceptibility and immunity.**—Infants under one year of age are less frequently attacked than other young children. Children are more frequently susceptible than adults except in extremely isolated communities not previously reached by the infection. Immunity is usually high among adults who have lived in large cities, less among those in rural sections. An attack of the disease gives permanent immunity as a rule. Second attacks are rare although they have been observed. Even during epidemics only one person in several hundred suffers a clinical attack of the disease.
8. **Prevalence.**—Infection occurs practically throughout the world, but cases are most frequent in the cooler part of the temperate zone, occurring both sporadically and in epidemics at irregular intervals, with the highest incidence in late summer and fall. Ten cases per 100,000 population per year is an ordinary incidence for the northern United States.

**9. Methods of control:****A. The infected individual, contacts, and environment:**

1. Recognition of the disease and reporting: Clinical symptoms, assisted by microscopical and chemical examination of the spinal fluid if lumbar puncture is performed.
2. Isolation: For 2 weeks from onset. Almost invariably the period of restriction of visitors and care in bed desirable for the patient extends beyond the period of presumed communicability of the disease.
3. Concurrent disinfection: Nose, throat, and bowel discharges, and articles soiled therewith.
4. Terminal disinfection: None.
5. Quarantine: Exposed children of the household of school age are to be kept from school, and adults of the household whose vocations bring them into contact with children or with food to be eaten uncooked are to be kept from such vocation for 14 days from last exposure to recognized case.
6. Immunization: None.
7. Investigation of source of infection: Search for and expert diagnosis of sick children to locate unrecognized and unreported cases of the disease.

**B. General measures during epidemics:**

1. General warning to physicians and the laity of the prevalence or increase of incidence of the disease, description of usual characteristics of onset, and necessity for diagnosis and medical care, particularly for bed rest of patients and protection of their muscles.
2. All children with fever should be isolated pending diagnosis.
3. Education in such technique of bedside nursing as will prevent distribution of infected discharges to others from cases isolated at home.
4. Protection of children so far as practicable against unnecessary contact with other persons, especially those outside their own homes, during epidemic prevalence of the disease.
5. Postponement of nose and throat operations on children in the presence of an epidemic.
6. Avoidance of unnecessary physical strain in children during an epidemic or in case of known exposure.

**Psittacosis**

1. **Recognition of the disease.**—The clinical criteria are an onset with chilly sensations, fever, headache; early pneumonic involvement; cough absent or usually nonproductive at first, later usually present and productive; sputum light yellow and characterized by extreme viscosity; tongue, white coat; anorexia extreme; constipation the rule; pulse usually slow in relation to temperature; great prostration; delirium common; albuminuria almost constant; relapses not uncommon. The white blood count is normal or slightly increased early, with leucopenia later. The disease may be transmitted to mice by inoculating blood drawn during first week of illness; the diagnostic criteria are the characteristic pathological changes in mice with the presence of elementary bodies (Leventhal-Coles-Lillie) in impression smears from the spleens of mice; the sputum, if obtainable, is more uniformly infectious than the blood; repeated trials are necessary. Blood serum of recovered cases contains complement-fixing antibodies.
2. **Etiological agent.**—A specific filterable virus.
3. **Source of infection.**—Newly acquired parrots, parakeets, love birds, or canaries. Birds which are apparently well occasionally transmit the infection.

4. **Mode of transmission.**—Contact with infected birds or their recent surroundings. Occasionally through a human case.
5. **Incubation period.**—In human cases, 6 to 15 days.
6. **Period of communicability.**—Ill birds and their surroundings highly infectious for man; patients less dangerous. The period of communicability of human cases is during their acute illness, especially when coughing.
7. **Susceptibility and immunity.**—All ages susceptible, but the disease is more severe in the higher age groups. One attack confers immunity.
8. **Prevalence.**—Usually in sudden house outbreaks among persons exposed to ill tropical birds. Deaths mainly confined to persons over 30 years of age. Female more frequently attacked than males because of more frequent exposure. Case fatality 20 to 50 percent.
9. **Methods of control:**
  - A. The infected individual, contacts, and environment:
    1. Recognition of the disease and reporting.
    2. Isolation: Important during the febrile and acute clinical stage of the disease. When actually handling patients with a cough, nurses should wear gauze masks, 8 layers of 40 to 48 threads per inch, or 16 layers 20 to 24 threads per inch.
    3. Concurrent disinfection: Of all discharges.
    4. Terminal disinfection: Incriminated birds should be killed and their bodies immersed in 2 percent creasol. The spleens then should be aseptically removed, part placed in equal parts of sterile glycerin and standard phosphate buffer solution of pH 7.5, and part in suitable fixative, and both specimens sent to the nearest available laboratory for examination. Carcasses should be burned before feathers dry.
    5. Quarantine: Buildings which housed birds should be quarantined until thoroughly cleaned and disinfected.
    6. Immunization: No demonstrated method yet fully accepted.
    7. Investigation of source of infection: Important, in order to trace infected lots of birds. Though apparently healthy birds occasionally convey the disease, healthy human carriers are unknown.
  - B. General measures:
    1. Strict regulation of traffic in birds of parrot family based on quarantine and laboratory examination, but prohibition of such traffic is preferable.
    2. Quarantine of homes and pet shops known to have harbored infected birds until thoroughly cleaned.
    3. Education of community in the danger of making house pets of birds of the parrot family, particularly when the birds have been recently imported or are of doubtful history as to contact with other and especially with sick birds of tropical origin.

### **Puerperal Infection (Puerperal Septicemia)**

1. **Recognition of the disease.**—Rise of temperature and local and general symptoms of bacterial invasion of the genital tract of the postpartum patient. Bacteriological examination of discharges and surfaces of the vagino-uterine tract may identify the infecting organism. Blood culture is advisable to identify the organism definitely when invasion of the blood stream has occurred, because of the availability of chemotherapy against certain bacteria.



2. **Etiological agent.**—Usually a hemolytic streptococcus, staphylococcus, or other pus-forming micro-organism among those commonly found in the nose and throat, in infected wounds, and on the hands.
3. **Source of infection.**—The hands and instruments used in the examinations just prior to or during or following confinement; the nose and throat of the parturient woman or her attendants just prior to, during, or just after confinement; infectious processes and discharges of the genital tract prior to confinement.
4. **Mode of transmission.**—Direct transfer to the tissues of the parturient canal by hands, instruments, dressings, by droplets discharged in speaking, sneezing or coughing from infected or carrier individuals brought into close relation to the patient during or after delivery. Indirectly by articles soiled by infectious discharges brought into contact with genital tract of the patient.
5. **Incubation period.**—One to three days; rarely longer.
6. **Period of communicability.**—Not communicable among parturient or postpartum cases except through the intermediate transmission of infection of attendants.
7. **Susceptibility and immunity.**—Terms not properly applicable. The chief factors of susceptibility are the state of the parturient canal during and after confinement, the state of exhaustion, or fatigue, or chilling, and loss of blood following delivery, and the exposure of mucous membranes to trauma and contact in the course of the delivery. There is no immunity by artificial means except such as derived from care and cleanliness in the antepartum, delivery, and postpartum care of the mother.
8. **Prevalence.**—The most common cause of preventable sickness and death related to childbearing.
9. **Methods of control:**
  1. Better education of physicians, nurses, and midwives in the science and art of midwifery.
  2. Strict asepsis in midwifery with especial attention to possibility of contamination by invisible spray from mouth and nose.
  3. Licensing and supervision of midwives where better attendance at childbirth cannot be provided.
  4. Official supervision or licensing of all institutions offering maternity services.
  5. Education of women in the hazards of self-interruption of pregnancy.

### Rabies

1. **Recognition of the disease.**—In the human being this acute, specific, rapidly fatal infection may not be recognized until a spasm of deglutition appears, unless the earlier and mild constitutional symptoms such as an expression of anxiety, paresthesias especially in or near the wound, and some paralysis have been looked for after the bite of a rabid animal. In the dog or other animal, recognizable symptoms are any unexplained change in behavior followed by excitability or paralysis, and death within 10 days of onset of symptoms. Verification of cause of death may be established by discovery of Negri bodies in nerve cells of brain or cord, or by animal inoculation.
2. **Etiological agent.**—A specific filterable virus.

3. **Source of infection.**—Saliva of infected animals, chiefly dogs. The milk or meat of infected animals, such as cows, is not dangerous for human use.
4. **Mode of transmission.**—Inoculation of denuded tissue with saliva of infected animals, almost always by bites.
5. **Incubation period.**—Usually 2 to 6 weeks. May be prolonged to 6 months or even longer. Duration depends on virulence of saliva and on site of wound in relation to richness of nerve supply and directness of nerve path to brain.
6. **Period of communicability.**—For 15 days in the dog before the onset of clinical symptoms and through the clinical course of the disease. Rarely if every communicable in man.
7. **Susceptibility and immunity.**—Susceptibility general. Natural immunity is not known to exist in man or among the animals subject to the disease. Prophylactic antirabic treatment of infected humans will prevent development of the disease with rare exceptions, if the treatment is begun soon after the injury and the site of the wound is not extensive in the distribution of the facial nerve.
8. **Prevalence.**—Rare in man; more likely to occur in males than females and most often in persons under 20 years of age. World-wide distribution. Universally fatal in developed human cases. More prevalent among dogs and sometimes in wild carnivorous animals.

9. **Methods of control:**

A. The infected individual, contacts, and environment:

1. Recognition of the disease and reporting: Clinical symptoms, confirmed by the presence of Negri bodies in the brain of the animal which has caused the injury, and by animal inoculations with material from the brain of such animal.
2. Isolation: None if the patient is under adequate medical supervision, and the immediate attendants are warned of possibility of inoculation by human virus.
3. Concurrent disinfection of saliva of patient and articles soiled therewith.
4. Terminal disinfection: None.
5. Quarantine: None.
6. Immunization: Therapeutic vaccination of the patient, after exposure to infection by actual inoculation with saliva. The possible chance of infection is to be weighed against the real but very small chance of developing paralysis due to the treatment, which may be fatal.
7. Investigation of source of infection: Search for the rabid animal and for any animals bitten by it. Carriers in animals are not known to occur.

B. General measures:

1. Detention and examination of dogs suspected of having rabies.
2. Immediate antirabic treatment of people bitten by dogs or by other animals suspected or known to have rabies, unless the animal is proved not to be rabid by subsequent observation or by microscopic examination of the brain and cord. The wound caused by any bite of a rabid animal should be treated at once to the depths with fuming nitric acid, with complete protection of the eye in the case of face bites.
3. Education in the care of dogs, especially directed to dog owners and the police, including advice against shooting of rabid or suspected animals in the head lest the laboratory

examination of the brain be rendered difficult or impossible. Dog owners should be impressed with the serious implications of keeping dogs in densely built up cities.

4. Control of dog population by requiring annual license, provision for the impounding and the humane destruction of all unlicensed dogs, quarantine of all dogs in areas where rabid animals have run at large.
5. Preventive vaccination of dogs is still in the experimental stage.

### Rocky Mountain Spotted (or Tick) Fever

1. **Recognition of the disease.**—Sudden onset with fever, headache, photophobia, muscle and joint pains, and chills. Appearance of the characteristic maculo-papular rash, usually first on the extremities (third or fourth day of fever) and rapidly spreading to involve most of the body. History of either a tick bite or exposure to ticks. A positive Weil-Felix reaction appearing usually during the second week of illness is a valuable confirmatory aid, though the reaction is not positive in all cases.
2. **Etiological agent.**—*Rickettsia, rickettsi*, a Gram-negative, nonfilterable, minute, intracellular micro-organism which has not been cultivated in the absence of living cells.
3. **Source of infection.**—Infected ticks.
4. **Mode of transmission.**—Bite of tick or contact with tick material such as its blood or feces on the unbroken skin.
5. **Incubation period.**—From 3 to about 10 days.
6. **Period of communicability.**—Not communicable from man.
7. **Susceptibility and immunity.**—Susceptibility general. One attack confers immunity which may or may not be permanent. Active artificial immunization by Spencer-Parker vaccine has given very encouraging results.
8. **Prevalence.**—Known to be widespread throughout the United States, western Canada, and several areas of South America. The season of occurrence is predominantly in the spring and early summer, corresponding to the appearance of adult ticks. The case fatality may vary considerably depending upon age (low in children) and upon the locality. For the whole United States it is about 20 per cent.
9. **Methods of control:**
  - A. The infected individual, contacts, and environment:
    1. Recognition of the disease and reporting: All cases of the disease should be reported to the health authorities.
    2. Isolation: None.
    3. Concurrent disinfection: All ticks on the patient should be destroyed.
    4. Terminal disinfection: None.
    5. Quarantine: None.
    6. Investigation of source of infection: Determination of areas where there are infected ticks should be attempted wherever practicable.
  - B. General measures:
    1. Personal prophylaxis by avoidance of tick-infested areas when feasible, by careful removal of ticks from the person as promptly as possible, and by protection of the hands when removing ticks from animals.



**THE U. S. PUBLIC HEALTH SERVICE**  
**In co-operation with the**  
**Iowa State Department of Health.**

Walter L. Bierring, M. D.  
Collaborating Epidemiologist  
and Health Commissioner.

## **ISOLATION FOR SCARLET FEVER AND OTHER STREPTOCOCCAL INFECTIONS OF RESPIRATORY TYPE**

Two changes affecting the administrative control of scarlet fever and closely allied upper respiratory infections have been incorporated in the Rules and Regulations of the Iowa State Department of Health. One modification reduces the minimum period of isolation for scarlet fever, the other places certain upper respiratory conditions in the same category with scarlet fever.

It is significant that the 6th edition of the bulletin entitled "The Control of Communicable Diseases," revised in 1945, places Streptococcal Sore Throat, Streptococcal Nasopharyngitis, Streptococcal Tonsillitis and "Septic Sore Throat" in the same classification with scarlet fever. All of these conditions are now regarded as having as a common aetiological agent one or other strain of *Streptococcus hemolyticus*. The bulletin also reduces the period of Isolation of the uncomplicated case of scarlet fever to fourteen days.

The above mentioned bulletin, published by the American Public Health Association, is official with the U. S. Public Health Service, the U. S. Navy and has been approved in principle by the Surgeon General, U. S. Army.

The State Board of Health, Advisory Body to the State Department of Health, at its meeting on Tuesday, January 8, 1946, approved the following steps:

1. That the Period of Isolation for the uncomplicated case of scarlet fever be a minimum of 14 days from the onset of the disease.
2. That the Period of Isolation or segregation for Septic Sore Throat, Streptococcal Sore Throat, Streptococcal Nasopharyngitis and Streptococcal Tonsillitis, "whether in the home or hospital, should be determined on the basis of the clinical course of the infection. In uncomplicated cases the period of communicability should be completed within 14 days."
3. That the period of Isolation as specified in paragraphs (1) and (2) be adopted as part of the Rules and Regulations of the Iowa State Department of Health.
4. That the changes in the Isolation period for Scarlet Fever and related Streptococcal Infections become effective January 15, 1946.

Saturday, January 12, 1946.



2. The destruction of ticks by clearing and burning vegetation, and the destruction of small mammalian hosts of ticks in infested zones have been suggested.

### Scarlet Fever (Scarlatina)

1. **Recognition of the disease.**—Sudden onset with nausea, vomiting, fever, and sore throat; rash (bright red spots on subcuticular flush) on second or third day. Cases occur without eruption, when provisional diagnosis may be made on sore throat, fever, vomiting, and history of exposure. The Schultz-Charlton blanching phenomenon may be used when rash has recently appeared: one-tenth to one-half cc. convalescent serum or scarlet fever antitoxin is injected into skin where rash exists, which causes local blanching in 6 to 36 hours if rash is scarlatinal; absence of blanching, however does not rule out scarlet fever.
2. **Etiological agent.**—A hemolytic streptococcus.
3. **Source of infection.**—Discharges from the nose, throat, ears, abscesses, or wound surfaces of sick or convalescent patients, and articles freshly soiled therewith. The nose and throat discharges of carriers may also spread the disease.
4. **Mode of transmission.**—Directly by contact with an infected person or carrier, indirectly by articles freshly soiled with discharges of an infected person or carrier, or through contaminated milk or milk products, not by skin desquamation.
5. **Incubation period.**—Two to seven days, usually three to four days.
6. **Period of communicability.**—Usually until 3 weeks from the onset of the disease, without regard to the stage or extent of desquamation, but until all abnormal discharges have ceased and all open sores or wounds have healed. Adults convalescent from scarlet fever appear to be less likely to transmit infection than are children. The infectious agent is more likely to be transmitted in colder seasons of the year.
7. **Susceptibility and immunity.**—Susceptibility to clinically recognized scarlet fever is not general, particularly among adults. Unnoticed infections occur. Immunity after an attack is usual but not invariable as second attacks occur. Artificial passive immunity of a few weeks may be developed by human convalescent serum. Artificial active immunity of uncertain duration can be developed in a considerable proportion of susceptible persons by the use of a suitable streptococcus antigen.
8. **Prevalence.**—Found in all parts of the world but unimportant in tropics and of low incidence in subtropical areas of North America. Commoner in urban than in rural areas. Most common in late winter and spring.
9. **Methods of control:**
  - A. The infected individual, contacts, and environment:
    1. Recognition of the disease and reporting: By clinical symptoms.
    2. Isolation: In home or hospital, maintained in each case until the end of the period of communicability. If medical inspection is not available, isolation for ~~21~~ 14 days from onset for uncomplicated cases.



3. **Concurrent disinfection:** Of all articles which have been in contact with a patient and all articles soiled with discharges of the patient.
4. **Terminal disinfection:** Thorough cleaning.
5. **Quarantine:** Exclusion of exposed children and teachers from association with children, and food handlers from their work, until 7 days have elapsed since last exposure to a recognized case.
6. **Immunization:** Passive immunization by the injection of human convalescent serum or scarlet fever antitoxin affords protection for about 12 days but such treatment of exposed persons is not warranted except under special circumstances and then only after making a Dick test to determine actual need. It is better to observe closely the exposed individual and reserve specific treatment until clinical signs develop. Active immunization of Dick-positive persons may be desired on a private basis but is generally impracticable as a public health measure.
7. **Investigation of source of infection:** The responsible authority should determine definitely whether some food is the common source (such as raw milk or milk products). In rural areas efforts to discover human sources of infection may be of value. Beyond this little can be done since present means are not practicable for the identification of infected persons and carriers of hemolytic streptococci capable of causing scarlet fever.

#### B. General measures:

1. Daily examination of exposed children and of other possibly exposed persons for a week after last exposure. Encourage removal of young susceptible contacts in the family to homes of adult friends for duration of communicable stage in the patient.
2. Schools should not be closed but rather daily inspection of the children and teachers by a physician or nurse should be provided.
3. In school and institutional outbreaks immunization of all exposed children with scarlet fever toxin may be advisable.
4. In the presence of a sharp outbreak, modified isolation of persons with sore throat or upper respiratory tract infection, at least through the especially active stage, particularly if exposure to scarlet fever patients be determined.
5. Education as to special danger of exposing young children to those exhibiting acute catarrhal symptoms of any kind.
6. Pasteurization of milk supply.

#### Septic Sore Throat

1. **Recognition of the disease.**—Acute sore throat appearing in epidemic outbreaks, often of a highly virulent character, and accompanied by various general septicemic manifestations. The onset is likely to be abrupt with chill, high temperature, and vomiting.
2. **Etiological agent.**—*Streptococcus* (hemolytic type).<sup>10</sup>
3. **Source of infection.**—The human nasopharynx, usually the tonsils, any case of acute streptococcus inflammation of these structures being a potential source of infection, including the period of convalescence of such cases. The udder of a cow infected by the milker is a common source of infection. In such udders the physical signs of mastitis may be absent.<sup>11</sup>

<sup>10</sup>Bovine mastitis of staphylococcus origin may lead to epidemic outbreaks of gastrointestinal disturbances in those who drink unpasteurized milk from a cow so infected.

<sup>11</sup>Mastitis in the cow, due to bovine streptococci, is not a cause of septic sore throat in human beings unless a secondary infection of the udder by a human type of streptococcus takes place.

4. **Mode of transmission.**—Direct or indirect human contact; consumption of raw milk contaminated by case or carrier or from an infected udder.
5. **Incubation period.**—One to three days.
6. **Period of communicability.**—In man, presumably during the continuance of clinical symptoms; in the cow, during the continuance of discharge of the streptococci in the milk, the condition in the udder tending to a spontaneous subsidence. The carrier stage may follow convalescence and persist for some time.
7. **Susceptibility and immunity.**—Susceptibility general, but somewhat less in young children. Immunity, either natural or acquired, is uncertain, if it occurs at all.
8. **Prevalence.**—Usually in epidemics, in any geographic area except where milk supply is pasteurized. Most cases in adolescents and adult milk drinkers. Most often in spring and early summer, but may occur at any season.
9. **Methods of control:**
  - A. The infected individual, contacts, and environment:
    1. Recognition of the disease and reporting: Clinical symptoms. Bacteriological examination of the lesions or discharges from the tonsils and nasopharynx may be useful.
    2. Isolation: During the clinical course of the disease and convalescence, and particularly exclusion of the patient from participation in the production or handling of milk or milk products.
    3. Concurrent disinfection: Articles soiled with discharges from the nose and throat of the patient.
    4. Terminal disinfection: Cleaning.
    5. Quarantine: None.
    6. Immunization: None.
    7. Investigation of source of infection: Search for cases and carriers among milkers and other handlers of unpasteurized milk, and for mastitis in milk cows.
  - B. General measures:
    1. Exclusion of suspected milk supply from public sale or use until pasteurized. The exclusion of the milk of an infected cow or cows in small herds is possible when based on bacteriological examination of the milk of each cow, and preferably the milk from each quarter of the udder at frequent intervals. Exclusion of human cases or carriers from handling milk or milk products.
    2. Pasteurization of all milk.
    3. Education in the principles of personal hygiene and avoidance of the use of common towel, drinking and eating utensils.
    4. In the absence of an epidemic, the milk of any cow with evidence of mastitis should be executed from sale or use as a protection in addition to pasteurization.

### Smallpox (Variola)

1. **Recognition of the disease.**—One to five days of febrile symptoms before the focal eruption, which is papular for 1 to 4 days, vesicular for 1 to 4 days, and pustular for 2 to 6 days, forming crusts which fall off 10 to 40 days after the first sign of the lesions, and leave pink scars which fade gradually. Unless scanty, the eruption is symmetrical and general, more profuse on prominences, extensor surfaces, and surfaces exposed to irritation, than on protected sur-

faces, flexures, and depressions. Most abundant and earliest on face, next on forearms, wrists, and hands, favoring the limbs, especially distally, more than the trunk. More abundant on shoulders and chest than on loins or abdomen, but the lesions may be so few as to be overlooked. The individual lesions are deep-seated and have an infiltrated base, except when modified naturally or by previous vaccination. Any case of purpura or hemorrhage into the skin with fever should be treated with smallpox precautions until another diagnosis is clear.

2. **Etiological agent.**—A specific virus.
3. **Source of infection.**—Lesions of the mucous membranes and skin of infected persons.
4. **Mode of transmission.**—By contact with persons sick with the disease; this contact need not be intimate, but aerial transmission through more than a few feet is unlikely. By articles or persons contaminated by discharges of the sick, including feces and urine, but for a brief time.
5. **Incubation period.**—Eight to sixteen days, commonly twelve days. Cases with incubation period of 21 days are reported.
6. **Period of communicability.**—From first symptoms to disappearance of all scabs and crusts.
7. **Susceptibility and immunity.**—Susceptibility universal, but not every exposure of a susceptible person results in the disease. Acquired permanent immunity usually follows recovery from an attack of the disease. Second attacks are rare. Artificial immunity by vaccination is usually complete for 5 to 20 years, but relative susceptibility often occurs after 5 years.
8. **Prevalence.**—Distribution is sporadic or epidemic form; varies widely according to the immunity status of the population of an area and its exposure to infection from without. Cases occur most often in young adult males. Occurrence is most frequent in the winter and least in summer months. There is no regional or climatic limitation to its prevalence except as population groups are more or less well protected by vaccination.
9. **Methods of control:**
  - A. The infected individual, contacts, and environment:
    1. Recognition of the disease and reporting: Clinical symptoms. The rapidly fatal or fulminating type and the very mild type may escape diagnosis until secondary cases appear.
    2. Isolation: Hospital isolation in screened wards, free from vermin, until the period of infectivity is past.
    3. Concurrent disinfection of all discharges. No article to leave the surroundings of the patient without boiling or equally effective disinfection.
    4. Terminal disinfection: Thorough cleaning and disinfection of premises.
    5. Quarantine: Isolation of all contacts until vaccinated with virus of full potency, and daily medical observation of these contacts until height of reaction is passed, if vaccination was performed within 24 hours of first exposure; otherwise for 16 days from last exposure.
    6. Immunization: Vaccination. Only dermal vaccination with calf vaccine is recommended.
    7. Investigation of source of infection: The immediate prior case should be sought industriously, and cases of reported



chickenpox associated in time or place carefully reviewed for error of diagnosis. Active cases of the disease without remaining constitutional symptoms must be sought, also passive carriers recently in contact with cases, and exposed vaccinated persons who may have developed unrecognized forms of the disease, and thus be serving as sources of infection.

**B. General measures:**

1. **General vaccination in early infancy, revaccination of children on entering a school, and of entire population when the disease appears in a severe form.**
2. **Preservation of smallpox vaccine below freezing up to the hour of vaccination. This includes shipment between cakes of dry ice.**
3. **In order to avoid possible complications of secondary and subsequent infections at the site of vaccination, it is important that the vaccination insertion be as small and superficial as practicable, not over one-eighth inch in any direction, and that the site be kept dry and cool. The use of shields or other dressings is to be condemned. The multiple pressure method is recommended. Primary vaccination as soon after 1 week of age as possible is desirable. The time of vaccination should be adjusted to avoid skin lesions elsewhere on the body, and in older children to avoid the warmer months. Particular care should be used in primary vaccinations beyond the age of infancy. Previous immunity is not shown by the result of a vaccination unless a fully potent vaccine was used which had been kept continuously below freezing from the time of manufacture until the hour of use.**

### **Syphilis**

1. **Recognition of the disease.**—A disease acquired by intimate personal contact or by transmission in utero, running a chronic course with local and constitutional manifestations, usually in a definite sequence although of infinite variety. Confirmation of diagnosis is practicable and should be established in every instance by finding the spirochete in the lesions or discharges or by positive serological findings.
2. **Etiological agent.**—*Treponema pallidum* (*Spirochaeta pallida*).
3. **Source of infection.**—Discharges from the lesions of the skin and mucous membranes, the blood of infected persons, and articles freshly soiled with such discharges or blood in which the *Treponema pallidum* is present.
4. **Mode of transmission.**—By direct personal contact with infected persons and indirectly by contact with discharges from lesions or with the blood of such persons, by sexual intercourse chiefly, by kissing, by dental and other surgical or technical accidents, congenitally from syphilitic mother through the placenta.
5. **Incubation period.**—About 3 weeks, minimum 10 days, occasionally 6 weeks or longer.
6. **Period of communicability.**—As long as the lesions are open upon the mucous membranes or skin, but practically limited to the first 2 years of the disease, except for congenital transmission.
7. **Susceptibility and immunity.**—Natural or acquired immunity is not known to exist. Recovery from an attack does not protect against subsequent infection.

8. **Prevalence.**—Widespread in all regions of the world, regardless of race, climate, or geography, or of sex or age. Prevalence varies from less than one-half of 1 percent to 30 percent and over of local population groups, averaging probably about 1 percent of all the people of North America. Occurs in sporadic, local or group epidemic, and commonly endemic form. Most commonly acquired by unmarried males between 20 and 40 years of age. Occurs in about 3 percent of all pregnant women. Differences in racial incidence are related to social rather than biological factors.

9. **Methods of control:**

A. The infected individual, contacts, and environment:

1. Recognition of the disease and reporting: Clinical symptoms, confirmed by microscopical examination of discharges and by serum reactions. Treatment should never be instituted without laboratory confirmation.
2. Isolation: Essential for noncooperative patients at least until surface lesions have healed. No person while in the communicable stage of syphilis should be permitted to engage in occupations of personal service in which he or she may infect others with syphilis, such as those of nurse or nursemaid, domestic servant, barber, hairdresser, chiropodist, manicurist, bath attendant, masseur, wet nurse. Sexual intercourse should be specifically warned against and so far as possible prevented for persons with syphilis until declared to be no longer in the communicable stage, by the physician responsible for treatment of the patient.
3. Concurrent disinfection of discharges and of articles soiled therewith.
4. Terminal disinfection: None.
5. Quarantine: None.
6. Immunization: None.
7. Investigation of source of infection: Each case, particularly those cases of presumably recent origin, as the congenital form of the disease in infants, and early cases of the acquired disease, should be traced to the probable source of infection, appropriate control and treatment of this spreader of disease instituted, and further exposed contacts examined for unsuspected or unreported cases.

B. General measures.

1. Provision for accurate and early diagnosis with special attention to the prompt detection of infected persons, provision for their treatment to prevent open lesions during the first 2 years following their initial infection, due consideration for privacy of record consistent with effective control of the patient, and search for source of infection.
2. Education in matters of sexual hygiene, particularly as to the fact that continence in both sexes and at all ages is compatible with health and normal development.
3. Repression of commercial prostitution and associated use of alcoholic beverages, by the police or other competent authority.
4. Restriction of the advertising of services or medicines for self-treatment of sex-diseases, and the prescribing of treatment by drug clerks.
5. Elimination of the use of common towels, cups and toilet articles from public places.
6. Serological as well as clinical examination for syphilis should be part of the routine prenatal supervision of the expectant mother and if she is found to be infected, antisyphilitic

treatment should be begun if possible before the end of the fifth month of pregnancy.

7. Routine serological blood tests should be employed as a part of every physical examination, particularly in the age group from 20 to 40 years.
8. Personal prophylaxis should be advised and be made available for use before or immediately after sexual intercourse to those who expose themselves to infection.

### Tetanus

1. **Recognition of the disease.**—An acute infectious disease caused by the toxin of the tetanus bacillus; characterized by painful muscular contractions, primarily of the masseter and neck muscles, and secondarily of those of the trunk; rarely the rigidity is confined to the region of the injury. A history and usually physical evidence of a wound of entry for infection is found. Superficial suppuration under a gauze dressing or a crust provides sufficient anaerobiosis for the tetanus bacillus to develop. Bacteriological examination and mouse inoculation may be useful in confirmation of diagnosis.
2. **Etiological agent.**—Tetanus bacillus, *Clostridium tetani*.
3. **Source of infection.**—Soil, street dust, manure, and feces.
4. **Mode of transmission.**—Wound infection.
5. **Incubation period.**—Commonly 4 days to 3 weeks, dependent somewhat upon the character, extent, and location of the wound. Longer periods of incubation have been noted. Subsequent operative interference or local tissue changes may initiate the activity of quiescent bacilli at even lengthy intervals after the original wound infection.
6. **Period of communicability.**—Patient not infectious except in rare instances where wound discharges are infectious.
7. **Susceptibility and immunity.**—Susceptibility general, but inoculated bacilli often fail to produce toxin. Artificial passive immunity for about 10 days' duration can be relied upon from the use of tetanus antitoxin. An active immunity may be produced by the use of tetanus toxoid but this requires reinforcing doses at appropriate intervals and to meet particular exposures.
8. **Prevalence.**—World-wide distribution, following wound infection. Most frequent in North America among young males and in summer. Prevalent especially following wounds contaminated with manured soil.
9. **Methods of control:**
  - A. The infected individual, contacts, and environment:
    1. Recognition of the disease and reporting: Clinical symptoms may be confirmed bacteriologically.
    2. Isolation: None.
    3. Quarantine: None.
    4. Immunization: Ordinarily a subcutaneous injection of tetanus antitoxin (1,500 units) given on the day of the wound. A second injection within 10 days may be desirable in certain instances. Previous active immunization with tetanus toxoid is preferable for those likely to be exposed to infection with tetanus.
    5. Investigation of source of infection: Of only academic interest, as the infecting organism is widely spread, especially through animal feces, in all inhabited places.



6. Concurrent disinfection: None.

7. Terminal disinfection: None.

**B. General measures:**

1. Educational propaganda such as "safety first" campaign, and "safe and sane Fourth of July" campaign.

2. Prophylactic use of tetanus antitoxin where wounds have been acquired in regions where tetanus is prevalent, and in all cases where contaminated material may be embedded in the wound.

3. Removal of all foreign matter as early as possible from all wounds.

4. Avoidance of dressings for smallpox vaccinations.

**Trachoma**

1. **Recognition of the disease.**—A specific destructive chronic inflammation of the conjunctiva, characterized by formation of granulations, either papillary or follicular, leading ultimately to formation of scar tissue, deformity of the eyelids, and involvement of the cornea. Microscopic examination of the conjunctival discharges and scraping cannot be relied upon as an aid to diagnosis, but may exclude other infections.

2. **Etiological agent.**—A filterable virus.

3. **Source of infection.**—Secretions and purulent discharges from the conjunctivae and adnexed mucous membranes of the infected persons.

4. **Mode of transmission.**—By direct contact with infected persons and indirectly by contact with articles freshly soiled with the infective discharges of such persons.

5. **Incubation period.**—Undetermined.

6. **Period of communicability.**—During the persistence of lesions of the conjunctivae and of the adnexed mucous membranes or of discharges from such lesions.

7. **Susceptibility and immunity.**—Susceptibility is general, greater in children than in adults and increased by malnutrition, chronic irritation by dust, wind, exposure to the sun, and by carelessness of personal cleanliness. Natural or acquired immunity is not known to occur.

8. **Prevalence.**—Not uncommon in immigrants from southern and eastern Europe. Incidence high among mountain population of southern Appalachians, and in the Ozark regions of Missouri and Arkansas and to an extent of 5 to 25 percent among Plains and Pueblo Indians of the United States. In Canada the main focus is in southern Manitoba; rare in white, native born Canadians; in Indians, cases are distributed from Ontario westward through the prairie provinces and into British Columbia. Cases most common among children but may occur and persist at any age.

**9. Methods of control:**

A. The infected individual, contacts, and environment:

1. Recognition of the disease and reporting: Clinical symptoms.

2. Isolation: Exclusion of the patient from general school classes. Isolation of the patient is not necessary if he is properly treated and instructed in precautions against spread of secretions of the eye to others by common use of articles.

The period of communicability apparently may be shortened by appropriate chemotherapy.

3. Concurrent disinfection of discharge and articles soiled therewith.
4. Terminal disinfection: None.
5. Quarantine: None.
6. Immunization: None.
7. Investigation of source of infection: Careful search should be made of persons in any way intimately related or exposed to the patient, particularly members of the household, and and playmates and schoolmates. Carriers are not known to occur, but apparently healed scars of old lesions may be the site of reactivity and become sources of infection.

#### B. General measures:

1. Search for cases by examination of school children, or immigrants, and among the families and associates of recognized cases; in addition, search for acute secreting disease of conjunctivae and adnexed mucous membranes, both among school children and in their families, and treatment of such cases until cured.
2. Elimination of towels and toilet articles used in common.
3. Education in the principles of personal cleanliness and the necessity of avoiding direct or indirect transference of body discharges.
4. Control of public dispensaries where communicable eye diseases are treated, and creation of special treatment classes where the disease prevails.
5. Exclusion of infected immigrants at national boundaries, or preferably at foreign port of embarkation.
6. Routine examination of eyes of children admitted to institutions, or in industrial camps where the disease is prevalent.
7. Under certain conditions in areas of widespread prevalence of the disease, the prophylactic use of solutions of zinc sulfate (1 percent), or copper sulfate (0.5 percent) may prove a valuable protective measure for children.

#### Trichiniasis (Trichinosis)

1. **Recognition of the disease.**—In human beings confined to persons who have eaten raw or insufficiently cooked pork and pork products, or occasionally bear meat, containing viable trichinae. Characterized by onset of variable intensity according to the amount of infected meat eaten and the abundance of trichinae in the meat. Nausea, vomiting, or diarrhea may be present. Muscle soreness or pain, edema of face and eyelids, laryngitis, subcutaneous hemorrhages, cough, pain in the chest, difficulty in swallowing, and labored breathing may occur, even pneumonia or involvement of the central nervous system in some cases. An intermittent fever is usual. Eosinophilia is usually marked. It may occasionally be absent in overwhelming infections and in individuals suffering from concomitant bacterial or virus infections. The symptoms are extremely variable. Intradermal and precipitin tests should be employed as aids in diagnosis. Direct microscopic examination of a biopsied sample of deltoid or gastrocnemius muscle, pressed, or digested in artificial gastric juice, may detect larvae after the 21st day of infection. Occasionally, larvae may be found in the blood or spinal fluid.
2. **Etiological agent.**—*Trichinella spiralis*.
3. **Source of infection.**—Uncooked or insufficiently cooked pork, less frequently meat of other animals.

4. **Mode of transmission.**—Only through consumption of meat containing viable infective larvae; adult worms and infective larvae occur in the same hosts.
5. **Incubation period.**—Usually the onset occurs 6 to 7 days after ingestion of the infective meat. In heavy infections gastrointestinal symptoms may appear in 24 hours.
6. **Period of communicability.**—Disease is not transmitted by human host to man.
7. **Susceptibility and immunity.**—Susceptibility is general. Neither natural nor acquired immunity is known to occur in man.
8. **Prevalence.**—World-wide. The parasite is particularly widespread in the United States, about one in every 6 necropsies showing infection. Clinical cases probably occur more frequently than is indicated by morbidity reports and the disease is probably often confused with other illnesses. No selection by age, sex, race, region, season, or climate except as these affect the custom of eating the insufficiently cooked flesh of infected hogs or other animals.
9. **Methods of control:**
  - A. The infected individual, contacts, and environment:
    1. Recognition of the disease and reporting: Clinical symptoms, marked eosinophilia, and intradermal and precipitin tests, confirmed after the third week of symptoms or fever by examination of biopsied muscle for encysted larvae.
    2. Isolation: None.
    3. Concurrent disinfection: None.
    4. Terminal disinfection: None.
    5. Quarantine: None.
    6. Immunization: None.
    7. Investigation of source of infection: Effort should be made to trace source of infection in pork or pork products believed to be involved. Examination of pressed or digested preparation may reveal trichina larvae.
  - B. General measures:
    1. Inauguration of local and State meat inspection to assure adequate processing of all pork products not processed under Federal inspection, and customarily eaten without further adequate cooking by the consumer.
    2. Encouragement of farmers and hog raisers in the use of standard swine sanitation practices which will reduce opportunity for trichina infection in swine.
    3. Control of rats, particularly on farms and around hog-raising establishments and stockyards.
    4. Burial or other adequate disposal of rat and swine carcasses to prevent hogs from feeding on them.
    5. Elimination of the current practice of feeding garbage and offal to swine or the adoption and enforcement of suitable laws and regulations ensuring cooking such material before its consumption by swine.
    6. Cooking of all fresh pork and pork products by the consumer, at a temperature and for a time sufficient to allow all parts of the meat to reach a temperature of at least 150° F., unless it is known that these meat products have been processed under Federal or other official regulations adequate for the destruction of trichinae.



### Tuberculosis, Pulmonary

#### 1. Recognition of the disease:

A. Primary or first infection type: Characterized by hilum gland enlargement or discrete parenchymal shadows in chest X-ray, usually with positive tuberculin test, sometimes accompanied by vague constitutional symptoms and rarely by erythema nodosum, all of which regress spontaneously except in occasional cases which develop meningitis or other progressive tuberculous disease. Recognition by history of contact and X-ray findings and confirmed by staining, culture, and animal inoculation of stomach washings.

B. Adult or reinfection type: Characterized by insidious onset with parenchymal pulmonary infiltration, usually in the upper lobes, recognizable by chest X-ray for a variable period of time before constitutional symptoms of physical signs appear. Pleurisy with effusion and unexplained hemoptysis are almost specific first symptoms: cough, fever, fatigue, and weight loss accompany advanced disease, which is recognizable by X-ray and by physical signs of dullness and rales, and confirmed by staining, culture, and animal inoculation of sputum, or of stomach washings where sputum is absent or negative. Tuberculin test usually positive. Failure to find organisms on microscopic examination of sputum does not rule out tuberculosis; repeated examinations of concentrated sputum and of stomach washings by culture and animal inoculation will eventually demonstrate tubercle bacilla in the majority of active cases.

2. **Etiological agent.**—Tubercle bacillus (human), *Myobacterium tuberculosis (hominis)*; bovine type has been established as important in some areas (outside the continental United States) where milk is not pasteurized and infection of cattle is prevalent; avian type doubtful for human infections.
3. **Source of infection.**—The specific micro-organism present in the discharges, or articles freshly soiled from the discharges, from any open tuberculosis lesions, the most important discharge being sputum. Of less importance are discharges from the intestinal and genitourinary tracts, or from lesions of the lymph nodes, bone and skin.
4. **Mode of transmission.**—Usually through the discharges of the respiratory tract, occasionally through those of the digestive tract, by direct or indirect contact with infected persons, by means of coughing, sneezing, or other droplet infection, by kissing, by the use of contaminated eating and drinking utensils, and possibly by contaminated flies and dust. Infection rarely occurs from casual contact, but usually results from the continued type of exposure characteristic of family relationships.
5. **Incubation period.**—Variable, dependent upon the type of the disease, dosage, age, and other factors.
6. **Period of communicability.**—As long as the specific micro-organism is eliminated by the host. Commences when a lesion becomes an open one, i. e., discharging tubercle bacilli, and continues until it heals or death occurs. The degree of communicability varies with the number and virulence of the bacilli discharged, the frequency of exposure, and the susceptibility of the persons exposed.
7. **Susceptibility and immunity.**—Susceptibility is general; highest in children under 3 years, lowest from 3 to 12 years of age, and relatively high for the rest of life; in aboriginal races greater than

in races long exposed to the disease; in the undernourished, neglected, and fatigued more than in the well fed and well cared for. Silicosis is a predisposing factor. Resistance of some degree is developed with age and by the maintenance of good nutrition. There is no evidence of natural specific immunity.

8. **Prevalence.**—Among the most common communicable diseases of man, with less variation in incidence of infection according to race than in mortality. In most occidental nations its incidence and mortality are declining. Age at which first infection occurs varies; children exposed in the household and in cities are infected earlier than rural children and those not so exposed, who may escape infection until adolescence or adult age. Mortality highest among infants, among adult males up to old age, and among adolescent and young adult females. Leading cause of death at ages 20 to 40. Aboriginal races when first exposed develop the disease in a rapidly fatal form, epidemic at times.

## 9. **Methods of control:**

### A. The infected individual, contacts, and environment:

1. Recognition of the disease and reporting: By use of the X-ray followed by thorough physical examination supplemented by tuberculin testing when necessary and confirmed by bacteriological examination of sputum and other materials. Early discovery in contacts, particularly in family groups exposed to an open case of tuberculosis ("positive" sputum), is of great importance.
2. Isolation of such "open" cases as do not observe the precautions necessary to prevent the spread of the disease may prove advisable. A period of hospital or sanatorium treatment is very desirable in all cases to remove the patient as a focus of infection in his home, and to teach him the hygienic essentials of tuberculosis control as well as to increase his chances of recovery.<sup>12</sup>
3. Concurrent disinfection: Of sputum and articles soiled with it. Particular attention should be paid to prompt disposal or disinfection of sputum itself, of handkerchiefs, cloths, or paper soiled therewith, and of eating utensils used by the patient. Patients should be trained in aseptic respiratory technique in sneezing, coughing, laughing, and talking.
4. Terminal disinfection: Cleaning and renovation.
5. Quarantine: None.
6. Immunization: None.
7. Investigation of source of infection: Contacts of all known cases should be examined roentgenologically, with particular attention to elderly persons with chronic cough.

### B. General measures:

1. Education of the public in regard to the danger of tuberculosis, the mode of spread, and the methods of control, with special stress upon the danger of exposure and infection in early childhood.
2. Provision of X-ray and clinical facilities for examination of contacts and suspects, public health nursing service for home supervision of cases and for ensuring examination of contacts, and dispensary service for continuation of collapse therapy in ambulant cases and for clinical supervision of patients not otherwise so supervised.

<sup>12</sup> "Collapse therapy" is of value in appropriate cases of the disease in shortening the period of communicability, as well as in reducing the case fatality.

3. Provision of adequate sanatorium facilities for isolation and treatment of active cases. A minimum of 2 beds per annual tuberculosis death in the community is a desirable ratio.
4. Elimination of the inhalation of silica dust in dangerous quantity in industrial establishments and trades.
5. Pasteurization of all milk supplies.
6. Improvement of habits of personal hygiene and betterment of living conditions among the underprivileged.
7. Improvement of housing conditions and nutrition of the poor.
8. Separation of babies from tuberculous mothers at birth.
9. Eradication of tuberculosis in cattle.

### **Tuberculosis, Other Than Pulmonary**

1. **Recognition of the disease.**—By local manifestations, by constitutional reactions, by specific reactions, and by identification of the tubercle bacillus in the lesions or their discharges through microscopic examination, culture, or animal inoculation.
2. **Etiological agent.**—Tubercle bacillus (human and bovine), *Mycobacterium tuberculosis (hominis et bovis)*.
3. **Source of infection.**—Discharges from mouth, nose, bowels, and genitourinary tract of infected human beings; the discharging lesions of bones, joints, and lymph glands; articles freshly soiled with such discharges; milk from tuberculous cattle.
4. **Mode of transmission.**—By direct contact with infected persons, by contaminated food, and possibly by contact with articles freshly soiled with the discharges of infected persons.
5. **Incubation period.**—Unknown.
6. **Period of communicability.**—Until discharging lesions are healed.
7. **Susceptibility and immunity.**—Susceptibility is general and is greater in children than in adults.
8. **Prevalence.**—Much less common than the pulmonary form and more rapidly falling in incidence, representing less than 10 percent of total cases and deaths from the disease. Especially common in infants and young children where intimately exposed to parental infection and to bovine infection through unpasteurized milk from tuberculous cattle.
9. **Methods of control:**
  - A. The infected individual, contacts, and environment:
    1. Recognition of the disease and reporting: Clinical signs and symptoms confirmed by bacteriological examinations.
    2. Isolation: None.
    3. Concurrent disinfection: Discharges and articles freshly soiled with them.
    4. Terminal disinfection: Cleaning.
    5. Quarantine: None.
    6. Immunization: None.
    7. Investigation of source of infection: Search should be made for possible original source in family, household, or other intimate contacts, and to discover previously unrecognized cases of similar origin, such a search to be aimed at discovery of infected but latent or arrested cases as well as those showing an active process. Special inquiry and investigation



should be made to discover possible source of bovine tubercle infection where unpasteurized milk has been used in the family or particularly used uncooked by the patient.

**B. General measures.**

1. **Pasteurization of milk and milk products and inspection of meats.**
2. **Eradication of tuberculosis in dairy cattle.**
3. Patients with open lesions should be prohibited from handling foods.
4. **Adequate hospital, sanatorium, and out-patient facilities for discovery, control, and clinical management.**

**Tularemia**

1. **Recognition of the disease.**—Whether the disease is acquired by the bite of the blood-sucking horse fly or the wood tick or from an infected abrasion or skin trauma or infected conjunctiva, or by ingestion of insufficiently cooked meat of infected rabbits, the onset is sudden, with pains and fever, and the patient is usually prostrated and confined to bed. If the disease follows a bite or a conjunctival infection or an infection through the skin, the lymph glands draining the area become swollen and tender and suppurate in about half the cases. The fever is of 3 to 4 weeks' duration, and the convalescence slow. The clinical diagnosis may be confirmed by animal inoculation, isolation of cultures, and agglutination reactions. Less reliable is the skin reaction.
2. **Etiological agent.**—*Pasteurella tularensis* (*Bacterium tularense*).
3. **Source of infection.**—Wild rabbits and hares, horse fly (*Chrysops discalis*), wood tick, (*Dermacentor andersoni* and *Dermacentor variabilis*), woodchuck, coyote, muskrat, opossum, tree squirrel, quail, skunk, water rat of Europe (*Arvicola amphibus*), cat, deer, dog, fox, hog, sage hen, and bull snake.
4. **Mode of transmission.**—By bites of infected flies and ticks and by inoculation through handling infected animals, as in skinning, dressing, or performing necropsies on infected animals, or by fluids from infected flies, ticks, rabbits, and woodchucks. Ingestion of insufficiently cooked rabbit meat. Rare cases occur from bites of coyotes, skunks, hogs, cats, and dogs, where the mouth of the animal was presumably contaminated from eating infected rabbits. Drinking contaminated water (observed in Russia).
5. **Period of incubation.**—From 24 hours to 10 days, average slightly more than 3 days.
6. **Period of communicability.**—There is no authentic record of transfer of the disease from man to man. The infecting micro-organisms have been found in the blood of man during the first 2 weeks of the disease; in conjunctival scrapings up to 17 days; in the primary lesion on the finger up to 21 days; in the sputum up to 31 days; in lymph glands up to 5 months; in bone marrow (sternum) 18 days after onset; in olecranon bursa 5 months after onset; in ulcer of the hand (not primary lesion) 5 months after onset; in ascitic fluid (taken during life) 5 months after onset; in pleural fluid 5 months after onset; in spinal fluid 16 days after onset; in the spleen taken at autopsy up to 30 days. Flies are infective for 14 days; ticks throughout their lifetime. Refrigerated rabbits kept constantly frozen at 15° C. may remain infective for three and a half years.

7. **Susceptibility and immunity.**—All ages are susceptible. Permanent immunity follows recovery from an attack. An immune person may acquire through an abrasion on his hand and by contact with virulent material, a local tularemic papule which harbors virulent organisms but does not cause notable constitutional reaction.
8. **Prevalence.**—The disease has been found in every State of the United States except Vermont and Connecticut, also in Canada, Japan, Russia, Norway, Sweden, Italy, Austria, Czechoslovakia, Turkey, Alaska, and central Germany. It occurs every month of the year, but especially during the hunting season. The case fatality is about 5 percent.
9. **Methods of control:**
  - A. The infected individual, contacts, and environment:
    1. Recognition of the disease and reporting: Human cases should be reported to the health department.
    2. Isolation: None.
    3. Concurrent disinfection: Disinfection of discharges from the ulcer, lymph glands, or conjunctival sac.
    4. Terminal disinfection: None.
    5. Quarantine: None.
    6. Immunization: None.
    7. Investigation of source of infection should be undertaken in each case.
  - B. General measures:
    1. Avoidance of the bites of, or handling of, flies and ticks when working in the infected zones during the seasonal incidence of bloodsucking flies and ticks.
    2. The use of rubber gloves by persons engaged in dressing wild rabbits wherever taken, or when performing necropsies on infected laboratory animals. Employment of immune persons for dressing wild rabbits or conducting laboratory experiments. Thorough cooking of meat of wild rabbits.
    3. Avoidance of raw drinking water in infected areas.

### Typhoid Fever

1. **Recognition of the disease.**—A general infection with the typhoid bacillus, characterized by a continued fever, and by involvement of the lymphoid tissues especially, with enlargement and often ulceration of Peyer's patches, enlargement of the spleen, usually rose spots on the trunk, diarrheal disturbance, and a variety of severe constitutional disturbances accompanying parenchymatous involvement of various viscera. The infecting micro-organism can be found in the blood, the feces, and the urine.
2. **Etiological agent.**—Typhoid bacillus, *Eberthella typhi*.
3. **Source of infection.**—Bowel discharges and urine of infected individuals. Healthy carriers are common.
4. **Mode of transmission.**—Conveyance of the specific micro-organism by direct or indirect contact with a source of infection. Among indirect means of transmission are contaminated water, milk, and shellfish, and probably flies.
5. **Incubation period.**—From 3 to 38 days, usually 7 to 14 days.
6. **Period of communicability.**—From the appearance of prodromal symptoms, throughout the illness and relapses during convalescence, and until repeated bacteriological examinations of the discharges show continuous absence of the infecting organism.

7. **Susceptibility and immunity.**—Susceptibility is general. Natural immunity exists to some extent in adults. Acquired immunity of permanent duration usually follows recovery from the disease. Artificial active immunity of probably 2 years' duration can be developed by the use of typhoid vaccine. Protection persists for about one year at a high level.
8. **Prevalence.**—Widespread throughout the world regardless of race, age, sex, climate, or geography. Formerly in most large cities of North America and in many extensive rural areas in endemic and epidemic form, and still endemic in some rural areas of the southern United States but commonly now occurring in sporadic cases and as small contact and carrier epidemics. Steadily falling in incidence, particularly in all urban areas supplied with water of a sanitary quality and pasteurized milk, and where human fecal waste is disposed of without polluting water supplies, food, or surface of the soil.
9. **Methods of control:**
  - A. The infected individual, contacts, and environment:
    1. Recognition of the disease and reporting: Clinical symptoms confirmed by specific agglutination test and bacteriological examination of blood, bowel discharges, or urine.
    2. Isolation: In flyproof room, preferably under hospital conditions, of such cases as cannot command adequate sanitary environment and nursing care in their homes. Release from isolation should be determined by two successive negative cultures of stool and urine specimens collected not less than 24 hours apart.
    3. Concurrent disinfection: Disinfection of all bowel and urinary discharges and articles soiled with them.
    4. Terminal disinfection: Cleaning.
    5. Quarantine: None.
    6. Immunization: Of susceptibles in the family or household of the patient who have been exposed or may be exposed during the course of the disease.
    7. Investigation of source of infection: The actual or probable source of infection of every case should be determined by searching for common and individual sources (1) polluted water, milk, shellfish, and other food supplies, (2) unreported cases and carriers.
  - B. General measures:
    1. Protection and purification of public water supplies.
    2. Pasteurization of public milk supplies.
    3. Limitation of collection and marketing of shellfish to those from approved sources.
    4. Sanitary disposal of human excreta.
    5. Supervision of other food supplies, and of food handlers.
    6. Prevention of fly breeding.
    7. Extension of immunization by vaccination to persons subject to unusual exposure by reason of occupation or travel, to those living in areas of high endemic incidence of typhoid fever and to those for whom the procedure can be systematically and economically applied, as in the military forces and institutional populations.
    8. Discovery and supervision of such typhoid carriers, and their exclusion from the handling of foods, as epidemiological and bacteriological evidence indicate are of importance.
    9. Exclusion of suspected milk supplies on epidemiological evidence pending discovery and elimination of the cause of contamination of the milk.



10. Exclusion of suspected water supply, until adequate protection or purification is provided unless all water used for toilet, cooking, and drinking purposes is boiled before use.
11. Education of the general public and particularly of food handlers concerning the sources of infection and modes of transmission of the disease.
12. Instruction of convalescents and chronic carriers in personal hygiene, particularly as to sanitary disposal of fecal waste and handwashing after use of toilet, and restraint from acting as food handlers.

### Typhus Fever

1. **Recognition of the disease.**—Whether in the classical and severe epidemic form of the louse-transmitted disease or in the mild flea-borne and sporadic type, the onset is variable, often being sudden and marked by headache, chills, fever and general pains, and a macular eruption on the fifth or sixth day, toxemia, and a quite definite course terminating in rapid lysis after about 2 weeks of fever. A positive Weil-Felix reaction is valuable as confirmation of the diagnosis.
2. **Etiological agent.**—*Rickettsia prowazeki*.
3. **Source of infection.**—The only known source is the blood of infected persons or infected rats.
4. **Mode of transmission.**—The infectious agent is transmitted from man to man by lice (*Pediculus corporis*) and from rat to rat or man by fleas (*Xenopsylla cheopis*).
5. **Incubation period.**—From 6 to 14 days, most often 12 days.
6. **Period of communicability.**—In the presence of lice, highly communicable until 36 hours have elapsed after the temperature reaches normal.
7. **Susceptibility and immunity.**—Susceptibility is general. One attack confers immunity, which is not always permanent.
8. **Prevalence.**—Widespread. Flea-borne typhus predominantly in late summer and fall; louse-borne predominantly in winter and spring. The case fatality of flea-borne typhus is 2 percent, and of louse-borne typhus 20 to 40 percent.
9. **Methods of control:**
  - A. The infected individual, contacts, and environment:
    1. Recognition of the disease, and reporting: Cases should be promptly reported to the health authorities.
    2. Isolation: In a vermin-free room.
    3. Concurrent disinfection: Destroy all lice and louse eggs on the clothing or in the hair of the patient.
    4. Terminal disinfection: None.
    5. Quarantine: In the presence of lice, exposed susceptibles should be quarantined for 14 days after last exposure.
    6. Immunization: Methods not applicable to conditions in the United States.
    7. Investigation of source of infection: Particular attention should be paid to patient's contact with rats, and with louse-infected persons or clothing.
  - B. General measures: The elimination of rats.
  - C. Epidemic measures: Delousing of persons, clothing, and premises.

### Undulant Fever (Brucellosis)

1. **Recognition of the disease.**—A general infection with gradual or insidious onset and characterized by irregular fever of uncertain but often prolonged duration, profuse sweating, chills (or chilliness), pain in joints and muscles. Agglutination test and identification of the infecting micro-organism in the blood, tissues, or discharges of the patient are valuable aids in diagnosis. A mild, obscure form of the disease, diagnosed only with difficulty, may last for years.
2. **Etiological agent.**—*Brucella melitensis* (*Alkaligenes melitensis*, *Micrococcus melitensis*); *Brucella abortus* (*Alkaligenes abortus*); *Brucella suis*.
3. **Source of infection.**—The tissues, blood, milk, and urine of infected animals, especially goats, cattle, and swine. Laboratory infections take place readily.
4. **Mode of transmission.**—By ingestion of milk from infected animals and by direct contact with infected animals or animal products.
5. **Incubation period.**—Six to 30 days or more.
6. **Period of communicability.**—Practically not communicable from person to person but the organism is present in the urine, usually for 90 days with a range of 20 to 300 days.
7. **Susceptibility and immunity.**—Susceptibility is not general, as most persons have some degree of natural immunity, especially to the abortus varieties of the infecting agent, or they have acquired partial immunity by ingestion of small doses of these. Immunity uncertain.
8. **Prevalence.**—Occurs more often in males than in females, and particularly in persons whose occupation brings them into relation with milk cows or goats, and in persons using unpasteurized milk of cows or goats. Found in every one of the United States and in Canada, affecting persons of any race. Occurs most often in the months of May to October. Many cases of a mild type doubtless occur without record.
9. **Methods of control:**
  - A. The infected individual, contacts, and environment:
    1. Recognition of the disease and reporting: The clinical picture and particularly the undulant character of the fever, supplemented by exact determination through the use of agglutination tests and bacteriological examination of the blood and urine for the infecting micro-organism.
    2. Isolation: None.
    3. Concurrent disinfection: Ordinary sanitary precautions. **Extreme care is necessary in laboratory work, especially when dealing with *Brucella melitensis*.**
    4. Terminal disinfection: None.
    5. Quarantine: None.
    6. Investigation of source of infection: Human cases should be traced to the common or individual source of infection, usually to infected domestic goats, swine, or cattle, or to the unpasteurized milk products from cattle and goats.
  - B. General measures:
    1. Pasteurization of milk whether from cows or goats.
    2. Search for infection among livestock by agglutination reaction and elimination of infected animals from the herd by segregation or slaughter.

3. Education of the public and particularly workers in slaughter house, packing houses, and butcher shops, as to the nature of the disease, the mode of transmission, and the danger of handling carcasses or products of infected animals.

### Whooping Cough (Pertussis)

1. **Recognition of the disease.**—An acute infection involving the trachea and bronchi and characterized by a typical cough usually lasting from 1 to 2 months. The initial catarrh usually has an insidious onset manifested by an irritating cough. The cough gradually becomes paroxysmal usually within 1 to 2 weeks. The paroxysms are characterized by a repeated series of violent coughs, each series consisting of many coughs without intervening inhalation and often followed by the characteristic, sonorous, inspiratory whoop. Paroxysms frequently end with vomiting of clear, tenacious mucus. The etiological agent has been recovered by use of special culture plates exposed before the patient's mouth during a cough in the catarrhal and early paroxysmal stage of the disease. A definite lymphocytosis is usually present.
2. **Etiological agent.**—Pertussis bacillus of Bordet and Gengou, *Hemophilus pertussis*.
3. **Source of infection.**—Discharges from the laryngeal and bronchial mucous membranes of infected persons.
4. **Mode of transmission.**—Contact with an infected person, or with articles freshly soiled with the discharges of such person. Healthy carriers are not known to occur.
5. **Incubation period.**—Commonly 7 days, almost uniformly within 10 days, and not exceeding 16 days.
6. **Period of communicability.**—Particularly communicable in the early catarrhal period before the typical cough confirms the clinical diagnosis. After the typical paroxysms are established, communicability gradually decreases and becomes negligible for ordinary nonfamilial contact in about 3 weeks even though the spasmodic cough with whoop may persist. The communicable stage must be considered to extend from 7 days after exposure to an infected individual to 3 weeks after onset of typical paroxysms.
7. **Susceptibility and immunity.**—Susceptibility is general. There is no natural immunity. The greatest susceptibility is in children between 6 months and 5 years of age, after which there is some decrease. One attack confers a definite and prolonged immunity, although second attacks do occur. A brief passive immunity may be conveyed to young children by convalescent serum or adult whole blood. Artificial active immunization is still in the experimental stage. Susceptibility is apparently higher in females at all ages than in males.
8. **Prevalence.**—Very prevalent, and a common disease among children everywhere regardless of race, climate, or geographical location. About half the reported cases in cities are in children under 5 years of age, and 90 percent in children under 10. Incidence and fatality rates are higher among females. Somewhat less prevalent in tropical than in temperate climates. Seasonal incidence variable, but mortality higher usually in spring months in North America. Cyclical occurrence irregular.



## 9. Methods of control:

### A. The infected individual, contacts, and environment:

1. Recognition of the disease and reporting: Clinical symptoms, supported by a differential leucocyte count.
2. Isolation: Separation of the patient from susceptible children, and exclusion of the patient from school and public places for the period of assumed infectivity. It is of particular importance to protect children under 3 years of age against contact with any other children with cough and fever, of whatever origin, and especially if whooping cough is suspected or is known to be prevalent. Isolation of children over 2 years of age is impracticable, and even in those under 2 should not be insisted upon at the expense of fresh air in the open if weather permits.
3. Concurrent disinfection: Discharges from the nose and throat of the patient and articles soiled with such discharges.
4. Terminal disinfection: Thorough cleaning.
5. Quarantine: Limited to the exclusion of nonimmune children from school and public gatherings for 14 days after their last exposure to a recognized case. This applies to exposures in the household or under other similar conditions. This precaution may be omitted if exposed nonimmune children are observed with care by a physician or nurse on their arrival at school each day for 14 days after their last exposure to a recognized case.
6. Immunization: Use of prophylactic vaccination is recommended by some observers, but for public health practice is still in the experimental stage. There is some evidence that attacks are milder in the vaccinated.
7. Investigation of source of infection: An effort should be made to discover undiagnosed and unreported cases, with the main object in view of protecting young children from exposure, and thus reducing the mortality. Postponement of the age of infection at least until school age and great care in the management of the disease in young children offer some hope of reducing deaths from whooping cough although reduction of incidence by any means appears unlikely. Carriers in the exact sense of this term are not known to occur.

### B. General measures: Education in habits of personal cleanliness and in the dangers of association or contacts with those showing catarrhal symptoms with cough.

## Yellow Fever

1. Recognition of the disease.—Clinical diagnosis usually rests upon sudden onset, fever, prostration, slow pulse in relation to body temperature, severe headache and backache, congestion of mucous membranes, bleeding gums, black vomit in severe cases, and late jaundice, with brief duration of illness. Pronounced albuminuria and leukopenia are characteristic. A history of possible bites of infected mosquitoes is corroborative but absence of such or even failure to find *Aedes aegypti* mosquitoes in the vicinity does not necessarily exclude the diagnosis. Almost symptomless and certainly unrecognizable cases of this infection occur among Negro races in Africa, and among very young children in tropical America.
2. Etiological agent.—A specific filterable virus.
3. Source of infection.—The blood of infected persons, monkeys, and probably some other wild animals.

4. **Mode of transmission.**—By the bite of infected *Aedes aegypti* mosquitoes, and of a few allied species. (It is not yet certain that some other suctorial insect may not be capable of acting as the transmitter.)
5. **Incubation period.**—Three to six days, rarely longer.
6. **Period of communicability.**—Two days prior to onset of fever and first three days of the fever, possibly 4. High degree of communicability where infected mosquitoes abound and there are many susceptible persons.
7. **Susceptibility and immunity.**—Recovery from an attack of the disease is regularly followed by immunity, apparently for life. There is no natural immunity. Brief artificial immunity may be developed by the use of convalescent serum. Active immunity is quickly developed by the use of modified living virus. The duration of this is uncertain but it apparently lasts for several years.
8. **Prevalence.**—Endemic in certain species of monkeys (and perhaps other jungle animals) of northern and central South America, and probably of Central America. Rare epidemics among human beings; sporadic human cases, probably of jungle origin. Not known in the Pacific Basin. No case in North America or Puerto Rico for many years. Endemic among human beings and some animals of western and central Africa.
9. **Methods of control:**
  - A. The infected individual, contacts, and environment:
    1. Recognition of the disease and reporting: Clinical symptoms.
    2. Isolation: Isolate from mosquitoes in a special hospital ward or thoroughly screened room. It is necessary that the room or ward should be freed from mosquitoes by fumigation, trapping, or highly responsible collection and destruction of the insects. Isolation necessary only for the first 4 days of the fever.
    3. Concurrent disinfection: None.
    4. Terminal disinfection: None, except for the purpose of destroying mosquitoes in the house occupied by the patient and in the nearest neighboring dwellings, usually best by gaseous fumigation.
    5. Quarantine: None.
    6. Immunization: Immunity is quickly conferred by a single inoculation with an attenuated strain of living virus.
    7. Investigation of source of infection: Human carriers are not known to exist. Search for undiscovered mild and unreported cases of illness resembling yellow fever, examination of viscerotome specimens from bodies of persons dying less than 10 days after onset of an acute febrile illness, and systematic testing of immunity in groups related in time and proximity to the case in question are of epidemiological importance. Search for the *Aedes aegypti* mosquito and other species believed to be capable of transmitting the infection should be particularly thorough in the vicinity of residence, work, or travel of known cases of the disease.
  - B. General measures:
    1. Immediate immunization of all persons in the community is the quickest control measure.
    2. Destruction of mosquitoes in infected and adjacent homes should be done at once.

3. Eliminate breeding of *Aedes aegypti* mosquito throughout the community by organized service of inspection and sanitary control.
4. An insecting service for discovery of those ill with the disease is desirable whether the disease occurs in the classical, mild, or atypical form.

### Supplementary List A

Communicable diseases or infestation occurring in the United States and Canada,, and in the insular possessions, but for which notification to the health authorities is not everywhere required.

Ascariasis.	Rat-bite fever (skodoku).
Coccidioidomycosis (coccidioidal)	Pediculosis (lousiness).
granuloma "Valley fever").	Relapsing fever.
Common cold.	Ringworm (dermatophytosis).
Filariasis.	Scabies (the itch).
Hemorrhagic jaundice (spirochetosis icterohemorrhagic, Weil's disease).	Schistosomiasis.
Impetigo contagiosa.	Vincent's infection (Vincent's angina, ulcerative or necrotic stomatitis, trench mouth).
Lymphogranuloma venereum (inguinale) and climatic bubo.	Yaws (frambesia).

### Ascariasis

1. **Recognition of the disease.**—Frequently, the first sign of infection is the spontaneous passage of an adult worm. The symptomatology is extremely vague except in heavy infections when individuals may exhibit digestive disturbances, abdominal pain, protruding abdomen, exaggerated nervous reflexes, restlessness, and disturbed sleep. The diagnosis usually depends on finding the ova in the stools.
2. **Etiological agent.**—*Ascaris lumbricoides*, the large intestinal round worm of man.
3. **Source of infection.**—Excreta of infected persons, particularly children and articles soiled with such excreta in and about houses lacking facilities for sanitary disposal of human wastes.
4. **Mode of transmission.**—By direct or indirect transmission of the embryonated eggs from soil or other polluted material to the mouth. The embryonated eggs hatch in the intestinal canal, penetrate the wall, and reach the lungs by the circulatory system. Most of those which reach the lungs in the blood stream into the air passages, throat, and stomach, and thence to the small intestines. Pollution of soil may be carried by shoes into houses and conveyances and to some distances.
5. **Incubation period.**—The worms reach maturity in the body about 2 months after infection.
6. **Period of communicability.**—As long as mature female worms live in the intestine. The production of about 200,000 eggs a day permits a wide spread of fecal pollution even when the infection is light.
7. **Susceptibility and immunity.**—Susceptibility is general and even relative resistance to repeated infection cannot be relied upon.
8. **Prevalence.**—High incidence of infection is found where low standards of hygiene, lack of sanitary essentials, poverty, and ignorance



create the conditions conducive to intensive pollution of soil in the immediate vicinity of houses. Children of the runabout and early school age are likely to be more frequently and more heavily infected than are older children and adults. Particularly prevalent among the people of the Appalachian plateau.

## 9. Methods of control:

### A. The infected individual, contacts, and environment:

1. Recognition of the disease by examination of the stools for ova.
2. Isolation: None.
3. Concurrent disinfection: Sanitary disposal of feces, and washing hands in soap and water after defecating and before eating.
4. Terminal disinfection: None.
5. Quarantine: None.
6. Immunization: None.
7. Investigation of source of infection: Individual and environmental sources of infection should be sought for in the persons and premises of the patient's family particularly.
8. Treatment: Suitable treatment for the removal of adult worms from infected individuals with hexylresorcinol, oil of chenopodium, or santonin, with preference in the order named.

### B. General measure:

Provision for adequate facilities for proper fecal disposal and elimination of soil pollution in areas immediately adjacent to the home, particularly in play areas of children.

In rural sections, privies should be so constructed as to obviate dissemination of ascarid ova through overflow, drainage, and other factors.

Education of all members of family, particularly children, to use toilet facilities available.

Encouragement of satisfactory hygienic habits on the part of children in particular, especially the practice of washing the hands before handling food, and after defecating.

## Coccidioidomycosis (Coccidioid Granuloma, "Valley Fever")

1. **Recognition of the disease.**—Commencing as a small, slowly extending papule appearing upon some nonhealing trivial wound, the characteristic lesion becomes a pustule which develops into a papilomatous base with many minute abscesses. Soreness and pain accompany the extension of the process. When the lesion develops in the lungs from inhaling spores, the condition resembles pulmonary tuberculosis. Identification of the infecting organism in the fresh discharges, pus, etc., by bacteriological examination and laboratory animal inoculation, confirms the diagnosis. The acute benign pulmonary form of the disease ("Valley fever") is common among newcomers in endemic areas, with symptoms similar to those of influenza, and with the development in some individuals of erythema nodosum.
2. **Etiological agent.**—*Coccidioides immitis*.
3. **Source of infection.**—Dust, soil and vegetation contaminated with the spores of the fungus.
4. **Mode of transmission.**—Through wounds of the skin smeared with contaminated soil or vegetation; inhalation of spores in dust and dry vegetation; and, in laboratories, inhalation of spores from cultures.
5. **Incubation period.**—Variable, 1 to 3 weeks in "Valley fever." Undetermined for coccidioid granuloma.

6. **Period of communicability.**—As long as open lesions persist. Direct communication from person to person of little if any importance.
7. **Susceptibility and immunity.**—About four percent of newcomers to endemic areas are susceptible. Very few develop the granulomatous type of infection. There is evidence that an attack of the acute benign pulmonary type confers immunity.
8. **Prevalence.**—"Valley fever" is prevalent in endemic areas in Southern California, parts of Texas, and Arizona. Incidence highest in hot dry weather, most common in white females. Recovery is usually complete. Coccidioidal granuloma is of sporadic occurrence in endemic areas, most common in males. Case fatality about 50 percent in the granulomatous form; only very few "Valley fever" cases progress to this form.
9. **Methods of control:**
  - A. The infected individual, contacts, and environment:
    1. Recognition of the disease and reporting: Clinical characteristics and bacteriological confirmation.
    2. Isolation: None.
    3. Concurrent disinfection: All discharges from skin lesions of the infected individual, from necrotic lymph nodes, the sputum, and articles soiled with these.
    4. Terminal disinfection: Not important.
    5. Quarantine: None; neither contacts nor carriers are known to be spreaders of the disease.
    6. Investigation of source of infection: Unprofitable except as a research effort.
  - B. General measures: None, other than education of persons generally in California that agricultural workers and laborers should have prompt treatment of skin wounds. Laboratory workers should exercise particular care in handling cultures of the infecting micro-organism and dried material which may contain its spores.

### Common Cold

1. **Recognition of the disease.**—An acute catarrhal affection of the upper respiratory tract, usually accompanied by a slight rise of temperature on the first day and chilly sensations with coryza, and general indisposition or lassitude lasting 2 to 7 days.
2. **Etiological agent.**—A filterable virus.
3. **Source of infection.**—Discharges from nose and mouth of infected persons.
4. **Mode of transmission.**—Usually directly by coughing, sneezing, and explosive manner of speech by which droplets are cast out into the air from the infected person to be inhaled by, or impinged on the face of, susceptible persons especially within short range of 3 feet or so; also by hand to face transfer of discharges, and indirectly by handkerchiefs, eating utensils, or other articles freshly soiled by discharges of the infected person.
5. **Incubation period.**—Probably between 12 and 48 hours; possibly as long as 72 hours.
6. **Period of communicability.**—While the virus remains in the discharges, an undetermined period, but believed to be limited to the early stages of the disease and probably no longer than a week from the onset.

7. **Susceptibility and immunity.**—Susceptibility universal. A period of at least relative immunity follows an attack of the disease and appears to be effective for a month or so.
8. **Prevalence.**—Most persons, except those living in small isolated communities, have one or more colds each year. The incidence does not vary materially according to age, sex, race, or occupation, but incidence appears to be highest in children under 5 years of age.
9. **Methods of control:**
  - A. The infected individual, contacts, and environment:
    1. On recognition of the premonitory or early stage of a "cold" the infected person should avoid direct and indirect exposure of others, particularly little children, feeble or aged persons, or persons suffering from any other illness.
    2. Isolation: Such modified isolation as can be accomplished by rest in bed for 1 or 2 days is to be advised.
    3. Concurrent disinfection: The disposal of nasal and mouth discharges by the use of soft paper, by burning or putting in the toilet, or otherwise, to avoid contamination of hands and articles of common use, is to be urged.
    4. Terminal disinfection: None, except airing and sunning room and bedding.
    5. Quarantine: None.
    6. Immunization: None.
    7. Investigation of source of infection; Unprofitable except as a research project.
  - B. General measures:
    1. Education in the refinements of personal hygiene and disposal of nose and mouth secretions.
    2. Maintenance of good bodily resistance by regular use of fresh air by day and night, outdoor exercise, sufficient rest to avoid conscious fatigue, a balanced diet, regular bowel evacuation, and clothing appropriate to climate and use.

### Filariasis

1. **Recognition of the disease.**—Characterized by recurrent of lymphadenitis and lymphangitis, particularly of the lower extremities, accompanied by febrile phenomena, chyluria, and later, evidence of lymphatic obstruction of the lower part of the body such as elephantiasis, varicose lymph glands, and lymph scrotum. Before the development of symptoms embryos are found in night blood; embryos are generally not found in the circulating blood after the development of marked symptoms.
2. **Etiological agent.**—A nematode worm. Several species of filariids are known to infect man; filariasis usually refers to infection with *Wuchereria bancrofti*, which is the only species reported in the United States.
3. **Source of infection.**—Certain species of mosquitoes harboring the infective larvae.
4. **Mode of transmission.**—In North America generally transmitted by the mosquito *Culex fatigans*. After this mosquito takes a blood meal from a person with circulating filaria embryos, the embryos develop in the mosquito into infective larvae in 14 to 21 days, at which time they migrate to the proboscis, from that location, they penetrate the human skin when brought in contact with it by the mosquito.



5. **Incubation period.**—Embryo filariae are not found in blood until at least 9 months after exposures; symptoms are not likely to develop for several years.
6. **Period of communicability.**—In man, as long as embryos are present in the blood; not sooner than 9 months from the time of exposure. In the mosquito, 14 to 21 days after larvae have developed and are present in its head and proboscis.
7. **Susceptibility and immunity.**—As far as is known, all persons are susceptible and no immunity develops.
8. **Prevalence.**—Rare in the continental United States; previously reported cases practically limited to Charleston, S. C. It is believed that this focus of infection no longer exists. Common in most tropical and subtropical parts of the world including Puerto Rico, Virgin Islands, and Philippines.
9. **Methods of control:**
  - A. The infected individual, contacts, and environment:
    1. Recognition of the disease and reporting.
    2. Isolation: Not practicable.
    3. Quarantine: None.
    4. Immunization: None.
    5. Investigation of source of infection most important. Surveys of incidence and range in endemic foci.
    6. Anti-mosquito measures should be undertaken against the transmitting mosquito, particularly in endemic areas. In the case of *Culex fatigans*, the mosquito generally breeds in filthy locations such as in septic tanks, collections of rain water in tin cans, etc. Screening of sleeping places of considerable value because *Culex fatigans* usually feeds at night.
  - B. General measures: Education of the public concerning the mode of transmission of filariasis and methods of mosquito control.

### Hemorrhagic Jaundice

#### (Spirochetosis Icterohemorrhagic, Weil's Disease)

1. **Recognition of the disease.**—An acute infection characterized by malaise, prostration, gastrointestinal symptoms, muscular pains, and fever at the onset, followed by defervescence, jaundice, and signs of nitrogen retention, of varying degree and duration. Relapses may occur. Severe cases develop hemorrhages at various sites and renal damage may be marked. About 50 percent of cases are without jaundice. Isolation of *Leptospira icterohaemorrhagiae* or *L. canicola* by inoculation of guinea pigs with the blood early in the course of the disease, or with the urine later, definitely identifies the condition. Positive serological tests strongly indicate the presence of Weil's disease.
2. **Etiological agent.**—*Leptospira icterohaemorrhagiae*, found in the blood or urine of patients and in the renal tract of rats. *L. canicola*, primarily a spirochete of dogs, is found in some human cases.
3. **Source of infection.**—Urine of rats and dogs. Contaminated water and food stuffs are important. Foxes, sheep, cats, and mice are at times involved.
4. **Mode of transmission.**—It appears that ingestion of contaminated food and water plays a role and that continued exposure of abraded or unabraded skin to alkaline waters containing the *Leptospirae* may lead to infection. Sewer workers, fish workers, coal miners, and veterinarians are especially exposed to infection.

5. **Incubation period.**—Four to 19 days, average 9 to 10 days.
6. **Period of communicability.**—The urine of patients continues to contain organisms for weeks or months following convalescence. Only one human case has been traced to direct contact. Ten to 50 per cent of wild rats harbor *Leptospirae* in their kidneys. They are persistent carriers.
7. **Susceptibility and immunity.**—Susceptibility is general. Natural immunity does not exist and artificial immunity is still questionable. A refractory state develops following recovery, and immune bodies may be detected for a considerable period thereafter.
8. **Prevalence.**—The disease is present in rats over the entire world. Dogs are also infected to a considerable degree. Man develops the disease when conditions are such as to allow unusually close contact between man and rats or dogs. Sporadic human cases have been reported from widely distributed cities in the United States.
9. **Methods of control:**
  - A. The infected individual, contacts, and environment:
    1. Recognition of the disease and reporting: Characteristic clinical symptoms, isolation of the organism from the blood or urine, and positive serological tests.
    2. Isolation: None.
    3. Concurrent disinfection: Urine and other discharges of the patient.
    4. Terminal disinfection: None.
    5. Quarantine: None.
    6. Immunization: None practical.
    7. Investigation of source of infection: Search for rats or dogs harboring the *Leptospirae* and for source of food or water to which such animals have access, e. g., communal baths, fish-cleaning establishments, mines, sewers, etc.
  - B. General measures:
    1. Rat control by ratproofing, trapping, and poisoning.
    2. Sanitary disposal of human wastes in civil and military environment.
    3. Destruction of *Leptospirae* in nature by drainage of mines and soil, and disinfection of water in fish-cleaning establishments with 1:60 hypochlorite solution.
    4. Education in the value of proper disposal of water, storing and keeping foods, and other general sanitary measures.
    5. Protection of workers exposed to infection by preventing organisms from entering through the skin and mouth by the use of boots, gloves, avoidance of skin abrasions, etc.

#### **Hepatitis, Infectious (Acute Catarrhal Jaundice)\***

1. **Recognition of the disease.**—An acute infection characterized by a prodromal period of from less than a day to about a week, following which jaundice of more or less severity occurs. The prodromal symptoms include headache, abdominal pain, malaise, anorexia, nausea, and vomiting. Fever is usually present although it may be so slight as to be missed. Toward the end of this period bile may be detected in the urine, and jaundice of minimal to marked intensity is soon noted, persisting for days or weeks. A leukopenia with relative lymphocytosis may be present. Convalescence is of variable length.

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There is considerable variation in the degree of severity of the disease, ranging from anicteric cases to cases of acute yellow atrophy of the liver. A similar clinical picture has been observed following certain industrial intoxications, antisyphilitic treatment, and several immunization procedures, but the relation of these clinical conditions to infectious hepatitis has not been determined.

2. **Etiological agent.**—Unknown.
3. **Source of infection.**—Probably discharges from the nose and mouth of infected individuals. There may be carriers.
4. **Mode of transmission.**—Presumably through direct contact with infected persons and carriers of the disease. Alimentary infection may be a factor but the evidence in this direction is scanty.
5. **Incubation period.**—Usually from 21 to 35 days.
6. **Period of communicability.**—Relatively short. About one week and apparently not more than two weeks.
7. **Susceptibility and immunity.**—Most common among children. Cases have been observed among individuals of all age groups. The disease is, in most instances, of longer duration and greater severity among adults than among children. Second attacks have not been reported.
8. **Prevalence.**—Epidemics are most commonly reported from rural areas and from institutions. Most outbreaks begin during the fall and winter months.
9. **Methods of control:**
  - A. The infected individual, contacts, and environment:
    1. Recognition of the disease and reporting: By clinical symptoms.
    2. Isolation: During the first week of illness.
    3. Concurrent disinfection: Discharges of nose and throat of patient.
    4. Terminal disinfection: None.
    5. Quarantine: None.
    6. Immunization: None.
    7. Investigation of source of infection: Desirable to detect and isolate other cases.
  - B. General measures:
 

Physicians of the vicinity should be informed when this disease is prevalent.

### Impetigo Contagiosa

1. **Recognition of the disease.**—A purulent dermatitis occurring sporadically in small epidemics and characterized by vesicular lesions turning to crusting seropurulent plaques, commonly on the face and often on the hands, sometimes widely scattered over the body. Bacteriological determination of the infecting micro-organism is of no importance.
2. **Etiological agent.**—Staphylococci and streptococci.
3. **Source of infection.**—Lesions on the skin of an infected person.
4. **Mode of transmission.**—By direct contact with the face and hands of an infected person and indirectly by contact with articles recently soiled by the moist discharges of the skin lesions. The infection is easily inoculable from place to place on the patient's body by scratching.



5. **Incubation period.**—Undetermined, but usually within 5 days and often within 2.
6. **Period of communicability.**—While lesions remain unhealed.
7. **Susceptibility and immunity.**—Susceptibility general, especially among children. Immunity does not follow an attack of the disease. There is no artificial immunity.
8. **Prevalence.**—Common among children, especially in warm weather. Occurs sporadically and also in epidemic outbreaks in children's institutions and summer camps.
9. **Methods of control:**
  - A. The infected individual, contacts, and environment:
    1. Recognition of the disease and reporting: On appearance of the characteristic clinical picture; it is of general importance only to prevent spread in schools and other groups of children.
    2. Isolation: Exclusion from school and from contact with other children or debilitated persons until pustules are healed.
    3. Concurrent disinfection: Cleanly disposal of dressings and moist discharges from the patient.
    4. Terminal disinfection: None.
    5. Quarantine: None.
    6. Immunization: None.
    7. Investigation of source of infection in the appearance of a case in a group of children the others should be watched. Among infants it is especially important to locate any skin infection in an attendant. All persons with skin lesions should be kept from even indirect contact with newborn babies.
  - B. General measures:
    1. Personal cleanliness, particularly the avoidance of common use of toilet articles among children.
    2. Prompt treatment of the first case in a group of children will abbreviate the period of communicability and prevent extension of lesions to new sites.

#### **Kerato-Conjunctivitis, Infectious (Superficial Punctate Keratitis, Nummular Keratitis)\***

1. **Recognition of the disease.**—Acute onset usually with sensation as of foreign body under the upper lid. Edema of lids, scleral injection, follicular hypertrophy of palpebral conjunctiva, enlargement and tenderness of pre-auricular lymph node with a watery discharge, followed in few or many of the cases by multiple pin-point corneal opacities. Involvement usually unilateral.
2. **Etiological agent.**—Considered to be a specific filterable virus.
3. **Source of infection.**—Probably the discharge from the eye of an infected person or carrier.
4. **Mode of transmission.**—Apparently contact with an infected person or carrier or with articles freshly soiled with discharges of such person.
5. **Incubation period.**—Not definitely established but probably about 5 days.

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6. **Period of communicability.**—Unknown but certainly during acute stage of the disease.
7. **Susceptibility and immunity.**—Susceptibility variable. No age, sex, or race known to be immune.
8. **Prevalence.**—Occurs in epidemic form in warm climates, also among industrial employees in temperate climates involving a small percentage of the individuals in the groups affected.
9. **Methods of control:**
  - A. The infected individual, contacts, and environment:
    1. Recognition of the disease: Clinical course confirmed by smears of conjunctival scrapings showing mononuclear cells and none of the usual etiologic agents of other forms of conjunctivitis.
    2. Isolation: None, provided hygienic measures are taken by the infected person.
    3. Concurrent disinfection: Disinfection or destruction of conjunctival and nasal discharges and articles soiled therewith.
    4. Terminal disinfection: None.
    5. Quarantine: None.
    6. Immunization: None.
    7. Investigation of source of infection: To locate other cases and institute precautions at home or working place.
  - B. General measures:
    1. Education as to personal cleanliness and as to danger of use of common towels and toilet articles.
    2. Avoidance of contact of hands with conjunctival or nasal discharges.

### **Lymphogranuloma Venereum (Inguinale) and Climatic Bubo**

1. **Recognition of the disease.**—Adenopathy, inguinal in male, pelvic in female, and history of exposure to venereal infection in tropics (climatic bubo) or in temperate climates. Natural infection limited to human beings, but experimentally transmissible to monkeys and mice, less readily to other species. Characterized by small herpetiform lesion of inoculation on external genitalia or uterine cervix (rarely in mouth), usually transitory, followed by subacute or chronic adenitis and periadenitis, usually with multiple foci of suppuration; frequently the cause of rectal stricture. Associated with constitutional symptoms, fever, prostration, loss of weight, rheumatic affections, and skin reactions. Clinical diagnosis may be confirmed by Frei antigen intradermal test, but not uniformly.
2. **Etiological agent.**—A specific virus.
3. **Source of infection.**—Discharges from lesions.
4. **Mode of transmission.**—Direct contact by skin and mucous membranes, almost exclusively in sexual relations with infected persons, or indirectly by articles soiled with discharges from the lesions of such persons.
5. **Incubation period.**—One to four weeks. Glandular enlargement follows the initial lesion in 1 or 2 weeks.
6. **Period of communicability.**—As long as there are open lesions upon skin or mucous membranes.
7. **Susceptibility and immunity.**—Susceptibility appears to be general. Immunity apparently does not follow an attack of the disease. There is no artificial immunity.

8. **Prevalence.**—A common venereal infection in the Negro quarters of cities in the United States. Widely prevalent in the tropics and common among inmates and clients of brothels in seaports.
9. **Methods of control:**
  - A. The infected individual, contacts, and environment:
    1. Recognition of the disease and reporting: Clinical symptoms.
    2. Isolation: Exclusion of infected person from sexual contacts and from preparation and serving of food during period of communicability.
    3. Concurrent disinfection: Discharges and articles soiled therewith.
    4. Terminal disinfection: None.
    5. Quarantine: None.
    6. Immunization: None.
    7. Investigation of source of infection: Search should be made for case of origin, particularly among prostitutes and among persons of Negro race, and among former residents of tropical and subtropical areas.
  - B. General measures:
    1. Education in matters of sexual hygiene, particularly as to the fact that continence in both sexes and at all ages is compatible with health and normal development.
    2. Repression of commercial prostitution and associated use of alcoholic beverages by use of police and other competent authority and control of living premises.
    3. Elimination of the use of common towels, cups, toilet articles, and eating utensils.
    4. Personal prophylaxis should be advised and made available for use immediately after sexual intercourse to those who who expose themselves to opportunity for infection.

### Pediculosis (Lousiness)

1. **Recognition of the condition.**—The discovery of the adult louse on some one or more of the hairy parts of the body or in the clothing, or the nits attached to hairs or to threads of body clothing. Irritation of the skin and adjacent adenitis may result from the scratching which the lousiness incites.
2. **Infesting agent.**—Head louse (*Pediculus capitis*), body louse (*P. vestimenti*), and crab louse (*P. Pubis*).
3. **Source of infestation.**—Usually the hairy parts of an infested person or, in the case of *Pediculus vestimenti*, the clothing of such a person.
4. **Mode of transmission.**—Direct contact with an infested person and indirectly by contact with clothing and headgear of such persons.
5. **Incubation period.**—Lice hatch in a week and reach sexual maturity in 2 weeks.
6. **Period of communicability.**—While live lice remain on the infested person or his clothing, and until eggs (nits) in hair and clothing have been destroyed.
7. **Susceptibility and immunity.**—Neither term appropriate to such a condition as lousiness. All human beings become lousy under suitable conditions of exposure and lack of personal cleanliness.
8. **Prevalence.**—Universal where there is neglect of washing of the person and body clothing.



### 9. Methods of control:

#### A. The infested individual, contacts, and environment.

1. Recognition of the state of lousiness by direct inspection of school children for lice and nits and report to school authorities.
2. Isolation: Exclusion of the infested child from school until live lice are destroyed, and supervision until nits are removed from the hair of the head.
3. Concurrent disinfection: Such washing of person and treatment of body clothing and toilet articles as will destroy lice and nits.
4. Terminal disinfection: None.
5. Quarantine: None.
6. Investigation of source of infestation: Search for unreported and undetected cases of lousiness among companions, and especially among members of family and household.

#### B. General measures:

1. Direct inspection of the heads and, when necessary, of the body and clothing where lousiness is found in groups of either children or adults, particularly of children in schools, institutions, and camp groups.
2. Provision of facilities, medicinal and hygienic, for freeing the persons and clothing of infested individuals and groups, of lice and nits.
3. Education in the value of bodily cleanliness by use of hot water and soap and of washing body clothing in a way to prevent the survival of lice.

### Rat-Bite Fever (Sodoku)

1. **Recognition of the disease.**—Usually a history of rat bite within 2 weeks or more; primary edematous lesion; swellings of regional lymph nodes; sharp febrile paroxysms alternating with a febrile intervals and accompanied by a rash of broad maculo-papules; presence of causative micro-organism in dark field preparations of blood of white mice, white rats, and guinea pigs inoculated from patient's blood, primary lesion, lymph nodes, or skin macules, or (less frequently successful) in preparations other than blood direct from patient. Caution should be exercised lest the experimental mouse or rat is already naturally infected.
2. **Etiological agent.**—*Spirillum minus* (*Spirochaeta morsus-muris*).
3. **Source of infection.**—Usually bite of wild rat; rarely cat, weasel, ferret, dog, or bandicoot.
4. **Mode of transmission.**—During the bite, some of the animal's blood escapes from the injured or diseased buccal mucosa into the wound, or the conjunctival secretion of the rat may contaminate the wound. Blood from an animal in the laboratory may infect man.
5. **Incubation period.**—Three to thirty days or more; usually one to three weeks.
6. **Communicability.**—Not transmitted from man to man.
7. **Susceptibility and immunity.**—No data for man; fatality may reach 10 percent in untreated cases.
8. **Prevalence.**—Distribution is world-wide. Surveys in Calcutta, Bombay, and Tokyo have shown 10 percent of wild rats infected. In the United States less than 100 human cases have been reported up to 1940.

## 9. Methods of control:

### A. The infected individual, contacts, and environment:

1. Recognition of the disease and reporting: Clinical symptoms are more uniformly definite than laboratory confirmation, but latter should always be attempted with thoroughness. Prompt cure by arsphenamines is of diagnostic value.
2. Isolation: None.
3. Concurrent disinfection: None.
4. Terminal disinfection: None.
5. Quarantine: None.
6. Immunization: None.
7. Investigation of source of infection: Not practicable except as suggested under General measures.

### B. General measures: Rat surveys and rat eradication. Avoidance of rat bites, especially by not sleeping on or near earthen floors or in rat-ridden communities and houses.

## Relapsing Fever

1. **Recognition of the disease.**—Short febrile paroxysms lasting 2 or 3 days alternating with a febrile periods of 3 or 4 days; general macular eruption; presence of causative micro-organism in dark field preparations or stained films from patient's blood taken at height of a febrile paroxysm, or from blood of white mice, white rats, or monkeys inoculated with patient's blood at that time.
2. **Etiological agent.**—*Borrelia recurrentis* (*Spirocheta recurrentis*, formerly known as *Spirillum obermeieri*).
3. **Source of infection.**—The genus of ticks, *Ornithodoros*, of which *O. turicata* and *O. hermsi* are examples, is the important source of human infection in the United States; *O. talaje* is a vector in Panama, Central and South America, while *O. Moubata* is the vector in tropical Africa. Lice (*Pediculus vestimenti* and *P. capitis*) are the common vectors in Asia and Europe.
4. **Mode of Transmission.**—By tick bite and louse bite.
5. **Incubation period.**—Up to 12 days, the average being 7.
6. **Communicability.**—On the American continent, only endemic foci are found, and spread from man to man is not apparent. Epidemics in Europe and Africa depend upon overcrowding and heavy infestation with lice and ticks.
7. **Susceptibility and immunity.**—Immunity is only partial. The case fatality for the European variety is about 4 percent. In India and Africa fatalities of 30 to 40 percent have been recorded, but no deaths have been reported for the United States.
8. **Prevalence.**—In the United States 258 cases were observed in Texas (1930-34), 100 in California (1930-35), and isolated cases in Colorado, Arizona, New Mexico, Idaho, Oregon, and Nevada.

## 9. Methods of control:

### A. The infected individual, contacts, and environment:

1. Recognition of the disease and reporting: Clinical symptoms with laboratory conformation; curative action of arsphenamines also confirmatory.
2. Isolation: None
3. Concurrent disinfection: None.
4. Terminal disinfection: None.
5. Quarantine: None.
6. Immunization: None.
7. Investigation of course of infection: Important.

**B. General measures:**

1. Tick and louse eradication.
2. In endemic areas avoidance of sleeping in the open or in camps, especially near "dry cases" in Texas.

**Ringworm (Dermatophytosis)**

(Of scalp, body, feet, and groin)

1. **Recognition of the disease.**—Inspection of the scalp and other parts of the body for the characteristics of the local lesion. Demonstration of the fungus in infected hairs or skin scales from the edges of lesions. In some cases identification of the species of fungus is important in determining choice of treatment.
2. **Etiological agent.**—Species of *Microsporum*, *Trichophyton*, or *Epidermophyton*.
3. **Source of infection.**—Lesions on scalps or bodies of infected persons, articles of clothing carrying the fungus or its spores, or infected hairs or scales shed by individuals and lodging in damp places.
4. **Mode of transmission.**—Directly by skin-to-skin contact with lesions of infected persons and indirectly by articles of wearing apparel or by surfaces contaminated by scurf or scalings or hair from lesions.
5. **Incubation period.**—Undetermined.
6. **Period of communicability.**—As long as the fungus or its spores can be found at the site of the lesions. Transmission is easy in ordinary conduct of home or recreational pursuits, as particularly those carried out indoors.
7. **Susceptibility and immunity.**—Susceptibility general. There is relative immunity to scalp infection by *Microsporum audouinii* after 15 years of age.
8. **Prevalence.**—Widespread, varying with aggression of people under conditions appropriate for spread, as at swimming pools. Foot ringworm more common in adults, and the body, face, and head forms more so among children, especially in warm weather, and where crowded, as in schools and orphanages.
9. **Methods of control:**

**A. The infected individual, contacts, and environment:**

1. Recognition of the disease and reporting: All cases recognized on inspection of school children should be reported to school authorities.
2. Isolation: Children and adults with marked cases of the disease should be excluded from privileges in gymnasium and at swimming pools. Exclusion from schools may be desirable in cases of ringworm of the scalp. There are too many carriers of foot ringworm to make control of them at all practicable.
3. Concurrent disinfection: Cleanliness of body and underclothes. Use cotton socks which can be boiled in case of infection of the feet. Shoes may be exposed to formaldehyde.
4. Terminal disinfection: None.
5. Quarantine: None.
6. Immunization: None.
7. Investigation of source of infection: Among school children medical inspection should be used to detect unreported cases. In gymnasias and buildings devoted to athletics, particularly swimming, search should be made as a routine, to exclude cases from common facilities.



**B. General measures:**

1. Cleanliness of body and underclothing, thorough drying of feet.
2. Prompt and persistent treatment of the lesions should be urged.
3. Protection of feet against contamination in showers and dressing rooms and areas used by people with bare feet.
4. The use of disinfecting solutions may prove useful in connection with common bathing and dressing rooms.

**Scabies (The Itch)**

1. **Recognition of the disease.**—Observation of the characteristic burrows of the itch mite. Its identification under a lens, or of the eggs scraped from the burrows, may be positive in skilled hands.
2. **Etiological agent.**—*Sarcoptes scabiei*, the itch mite.
3. **Source of infestation.**—Persons harboring the itch mite on their skin in burrows, particularly between the fingers.
4. **Mode of transmission.**—Direct contact with infested persons and indirectly by use of underclothing, gloves, bedding, etc., of such persons.
5. **Incubation period.**—Merely the length of time for the itch mite to burrow under the skin and lay eggs and start the itching and scratching, all of which may occur within 24 to 48 hours of original infestation.
6. **Period of communicability.**—Until the itch mites and the eggs are destroyed.
7. **Susceptibility and immunity.**—These terms are not appropriate to this condition. Anyone may become infested and immediately reinfested.
8. **Prevalence.**—Widespread and occurring sporadically and in epidemics.
9. **Methods of control:**
  - A. The infested individual, contacts, and environment:
    1. Recognition of the disease and reporting: The condition should be reported to the school authorities if discovered in school children.
    2. Isolation: Children should be excluded from school until disinfested. Persons should be denied common recreation and bathing facilities while infested.
    3. Concurrent disinfection: Care of body clothing and bedding until free from the infestation.
    4. Terminal disinfection: Underclothing and bed covering to be so treated by dry heat or washing as to destroy the mite and the eggs.
    5. Quarantine: None.
    6. Investigation of source of infestation: Search for unreported or unrecognized cases in companions or house or family mates of the infested individual.
  - B. General measures: Cleanliness of body and underclothing and bed covering especially.

**Schistosomiasis**

1. **Recognition of the disease.**—History of skin contact with water known to contain the infected intermediate host followed by itching spots on the skin as the water dries. A few weeks later there is evidence

of colitis or cystitis manifested by dysentery and hematuria, respectively, accompanied by leukocytosis and eosinophilia. This stage progresses and becomes complicated by cirrhosis and splenomegaly with ascites. Finding the ova in the stools or urine confirms the diagnosis. Massive larval infection may cause acute prostration and high fever.

2. **Etiological agent.**—Three species of schistosomes mature in man, *Schistosoma mansoni* in Central America, the West Indies, northern South America and Africa, *S. haematobium* in Africa and *S. japonica* in the Orient. The ova of these three flukes are spined and are deposited by the females into the abdominal venules from which they work their way to the mucosa of the bowel or bladder. None of these flukes is indigenous to the continental United States but they are found in Puerto Rico and the Philippines. The larvae of some other schistosomes found in the United States may cause "swimmer's itch" by penetrating the human skin. However, these schistosomes do not infect a man and the larvae die in the skin.
3. **Source of infection.**—Waters containing the intermediary snail host, contaminated by human excrement containing the ova of the parasite.
4. **Mode of transmission.**—Ova hatch in the water and enter the snail host. In the snail multiplication occurs and swimming larval forms called "cercariae" develop, which leave the snail and upon contact with skin, penetrate it to gain access to the blood stream.
5. **Incubation period.**—A dermatitis occurs at the time of penetration of the cercariae. At least one month, usually three, elapses after infection before the ova are found in the stools or in the urine.
6. **Period of communicability.**—As long as the ova are discharged in the stools of infected persons, and as long as the cercariae are to be found in the water. The ova hatch into free-swimming forms that are infectious only for the snail, cercariae are short-lived but infected snails give off cercariae for several months.
7. **Susceptibility and immunity.**—Susceptibility is general. There is no immunity.
8. **Prevalence.**—No autochthonous cases in the continental United States. Occurs in areas of the West Indies and northern South America; common in the Orient and Africa.
9. **Methods of control:**
  - A. The infected individual, contacts, and environment:
    1. Recognition of the disease by symptomatology and microscopical examination of the stools or urine for ova.
    2. Isolation: None.
    3. Concurrent disinfection: Sanitary disposal of feces and urine.
    4. Terminal disinfection: None.
    5. Quarantine: None.
    6. Immunization: None.
    7. Investigation of source of infection: Important; examination of local waters for infected snails followed by a vigorous campaign to eliminate sources of pollution and snails from these waters.
  - B. General measures:
    1. Regulation of disposal of sewage.
    2. Treatment of the infected persons by sodium antimony tartrate, foudadin, or other trivalent antimony compounds.

3. Education of people in endemic areas regarding method of transmission. School children should be warned not to bathe in infected streams and persons whose occupations require them to wade in infected waters should be cautioned and provided with suitable waterproof garments.

### Vincent's Infection

#### (Vincent's Angina, Ulcerative or Necrotic Stomatitis, Trench Mouth)

1. **Recognition of the disease.**—Lesions occurring on either the tonsils of pharynx (angina), or the oral mucosa (stomatitis) are characterized by necrosis, pseudomembranous formation, salivation, and a fetid odor. In angina and the more acute forms of Stomatitis there is marked pain on swallowing, enlarged tender cervical nodes, and slight fever. Acute type of Vincent's infection is characterized by a rapid onset. The affected gums become acutely inflamed, the interdental papillae edematous with a soft stick appearance, bleeding easily and exquisitely painful. Necrosis of the interdental papillae occurs with subsequent development of characteristic grayish-white pseudomembrane which is easily removed leaving a raw, profusely bleeding surface. Ulcerations may coalesce and progress to adjoining alveolar palatal, and buccal mucosa, spread toward the buccal sulcus being the more common. A distinctive mixed bacterial flora including spirochetes, fusiform bacilli, and other organisms characterize this group of diseases. Differential diagnosis should exclude; suppurative periodontitis, diphtheria, mucous patches of syphilis, agranulocytic angina, scurvy, and sprue.
2. **Etiological agent.**—Complex: underlying and predisposing conditions apparently important, if not essential, in development. Fuso-spirochetal flora are present in small numbers on healthy tissue but proliferate rapidly under pathologic conditions.
3. **Source of infection.**—Discharges from the lesions of infected persons and from carriers often assumed to be source of infection but not yet adequately demonstrated.
4. **Mode of transmission.**—Direct contact with infected persons or carriers and articles freshly soiled by such persons is often assumed to be source of infection, but not yet adequately demonstrated.
5. **Incubation period.**—Variable and undetermined.
6. **Period of communicability.**—Not determined but presumed to be as long as the infecting organisms are found in the mouth. Not readily communicable.
7. **Susceptibility and immunity.**—Susceptibility probably general if predisposing conditions are present. Milder forms of Vincent's stomatitis seem more prevalent under conditions of depressed vitality, malnutrition, neglected oral hygiene, etc. No immunity known to be acquired. Prevailing predisposition, not clearly understood, makes reoccurrence in susceptible individuals likely.
8. **Prevalence.**—Relatively rare and sporadic in general population. Not uncommon among persons of low nutrition and neglected oral hygiene; seemingly more prevalent in children and younger adults than in older adults. May be high at times in segregated populations living under unfavorable or crowded conditions.



**9. Methods of control:****A. The infected individual, contacts, and environment:**

1. Recognition of the disease and reporting: On clinical manifestations with or without bacteriological confirmation; should be reported to school authorities when found among school children, and under conditions of military service should be reported whether as angina or stomatitis.
2. Isolation: None.
3. Concurrent disinfection: All discharges from mouth and nose.
4. Terminal disinfection: None.
5. Quarantine: None.
6. Immunization: None.
7. Investigation of source of infection: Inspection of mouths and throats of other children or adults associated with the patient, at home or in school. Carriers are too common to be worth searching for by culture methods.

**B. General measures:**

1. Encouragement of oral hygiene; correction of abnormal or diseased conditions of teeth and gums.
2. Education in matters of nutrition and hygiene.
3. Outbreaks involving small children, especially institutional, warrant special measures because of the danger of the possible complication of noma.

**Yaws (Frambesia)**

1. **Recognition of the disease.**—The initial lesion in the form of a granuloma or papules, is located extragenitally, usually on the legs, and is often engrafted upon a preexisting wound or ulcer. In from 1 to 3 months, widespread lesions of the skin develop. The first generalized lesion may be in the form of a furfuraceous desquamation as though the skin had been dusted with flour, but soon characteristic raspberry-like lesions appear. Bone and joint pains are common, and bone lesions are frequently observed. The constitutional symptoms are mild and of little diagnostic value. Among the commonest lesions are those of the soles of the feet, giving rise to the condition known as "crab yaws" because of the difficulty and manner of locomotion. The course of the disease is chronic, and the relapses are common. The blood Wassermann reaction and related tests become positive soon after the appearance of the initial lesion and remain positive for many years unless affected by treatment.
2. **Etiological agent.**—*Treponema pertenuis*.
3. **Source of infection.**—Discharges from skin lesions and mucous membranes.
4. **Mode of transmission.**—Direct contact with lesions of patient and by nonbiting flies which convey the discharges of infected persons to others.
5. **Incubation period.**—Three and one-half weeks (experimental) to three or more months.
6. **Period of communicability.**—As long as the lesions are open and there are moist discharges.
7. **Susceptibility and immunity.**—There is no racial immunity but Negroes are more commonly affected than whites; children and young people more than adults. Recovery from an attack does not result in immunity to reinfection. It is neither congenital nor hereditary.
8. **Prevalence.**—Very common in the tropics, especially in Africa, Polynesia, the Philippines, and some parts of the New World. In the West Indies more prevalent in some villages than other. At pres-

ent not known as indigenous in continental North America. Especially prevalent in the Caribbean area: Jamaica, Haiti, Trinidad, Antigua, and other islands of the Leeward group, and some coastal and valley settlements of Colombia.

## 9. Methods of control:

### A. The infected individual contacts, and environment:

1. Recognition of the disease and reporting.
2. Isolation not practicable.
3. Concurrent disinfection: Protection of all sores and lesions in endemic locality, and disinfection of soiled dressings.
4. Terminal disinfection: None.
6. Immunization: None.
7. Investigation of source of infection: In indigenous areas local surveys of incidence should be made, range of prevalence determined, and cases in early stages sought for, especially in children.

### B. General measures:

1. Free clinics, laboratory service, and arsenicals for diagnosis and treatment.
2. Information service for physicians, patients, and public.
3. Promotion of adequate personal prophylaxis.
4. Education in schools, clinics, clubs, etc., as to methods of spread, prevention, and treatment.

## Supplementary List B

Diseases of concern to health officers because of their group or epidemic occurrence and the practicability of their prevention.

Botulism.  
Food infections and poisonings.  
Pellagra.

## Botulism

1. **Recognition of the disease.**—A disease of intoxication, the symptoms of which develop suddenly with gastrointestinal pain, diarrhea or constipation, prostration, and a variety of central nervous system paralyzes, the first of which is likely to be an oculo-motor paralysis, all due to the toxin of the particular saprophytic organism. Biological and toxicological tests with laboratory animals may confirm presence of toxin of the botulinus bacillus in the food.
2. **Etiological agent.**—The toxin produced by the botulinus bacillus (*Clostridium botulinum*, *C. parabotulinum*) in foods improperly processed.
3. **Source.**—Food usually taken uncooked from cans or jars not subjected to adequate heat of sufficient duration or under sufficient pressure during the processing.
4. **Mode of transmission.**—Only by eating food containing the botulinus toxin.
5. **Incubation period.**—Symptoms appear almost always within 24 hours after taking the particular food product, possibly longer, the interval being determined by the amount of the poisoned food taken and its botulinus toxin content.
6. **Communicability.**—This term does not apply. The disease is not conveyed from man to man, or among animals or men, except as food containing the botulinus toxin is consumed by them.

7. **Susceptibility and immunity.**—Susceptibility is general. The symptoms develop according to the amount of toxin ingested in relation to body weight of the person. Antitoxins conferring passive immunity are of use only after infection is known to have occurred.
8. **Prevalence.**—Sporadic cases and groups of cases occur in all countries and always in relation to some perishable food product which has been so kept or preserved as to permit the development, under partially anerobic conditions, of *Clostridium botulinum*, to the extent of forming the toxin that causes the symptoms. In the United States the disease has in recent years followed most commonly the use, without further or adequate cooking, of home-canned vegetables and meat products.
9. **Methods of control:**
  1. Governmental control by regulation and inspection of commercial processing of canned and preserved foods.
  2. Education of housewives and others concerned with home canning of foods in the essentials of safe processing, as to time, pressure, and temperature factors.
  3. Education in value of boiling with a small amount of soda, home-canned green and leafy vegetables before serving, and the thorough cooking of sausage and other meats and fish products held for later consumption.

### Food Infections and Poisonings

1. **Recognition of the disease.**—Acute onset, usually with nausea and abdominal pain or distress, with vomiting and diarrhea, prostration, headache, and sometimes fever. Examination of vomitus and feces may reveal the infecting micro-organism, or the poisonous substance.
2. **Etiological agent.**—A variety of organisms, oftenest of the enteriditis or salmonella, or staphylococcus groups. A variety of organic and inorganic poisons.
3. **Source of infection.**—Food recently ingested.
4. **Mode of transmission.**—In the case of bacterial poisonings, by the transfer of the particular etiological agent by food handlers to the food ingested. Hands unwashed after use of toilet, or hands or arms with furuncles, boils, or other sores are usual means of conveyance of contamination to foods. Food may be contaminated with a rodent strain of the salmonella group by rats or mice. The flesh of some food animals infected with certain salmonella strains may cause severe symptoms. Ingestion of foods to which some poisonous substance was accidentally or intentionally added, or in which a natural but poisonous substance occurs, is a direct cause of food poisoning.
5. **Incubation period.**—In the case of bacterial infections, may be from a few to 48 hours after ingestion of food. The symptoms may develop almost immediately, or several hours after ingestion of bacterial or nonbacterial poisons in the food.
6. **Period of communicability.**—This term does not apply to these conditions.
7. **Susceptibility and immunity.**—These do not apply.
8. **Prevalence.**—Sporadic, but in the main of rather common occurrence, especially in persons taking meals away from home, and in public eating places.



**9. Methods of control:**

1. All group outbreaks of infections and poisonings attributed to foods should be at once reported to the department of health.
2. Specimens of the food suspected should be secured and used for laboratory examination.
3. The vomitus and feces of patients should be collected for bacteriological and chemical examination.
4. Persons concerned with the preparation and serving of foods should be brought under observation for medical and bacteriological examination to determine the possible origin, whether from bowel discharges or infections of the skin.
5. Epidemiological inquiries should include particular study of water and milk used by the persons affected.

Isolation, quarantine, concurrent and terminal disinfection are not applicable in such cases.

**Pellagra**

1. **Recognition of the disease.**—Pellagra is a general disease brought about by a deficiency of a protective or preventive substance or substances in the diet. Pellagra is characterized by symmetrical erythematous dermatoses on the exposed parts of the head, neck, and extremities, appearing commonly as the spring and summer advance, by gastrointestinal disorders, by glossitis, stomatitis, and in the advanced stages by emaciation, lethargy, mental confusion, and deterioration.
2. **Etiology.**—The cause is the lack of nicotinic acid or closely related compounds in the diet over a prolonged period of months or years.
3. **Transmission.**—Not communicable.
4. **Incubation period.**—Term does not apply. The symptoms rarely appear within 3 months after use of a controlled and artificially deficient diet in man. History of deficient diet in human cases is usually one of months or years.
5. **Period of communicability.**—Term does not apply.
6. **Susceptibility and immunity.**—Susceptibility is general. There is no immunity.
7. **Prevalence.**—The disease is endemic where chronic poverty, ignorance in food uses, and unavailability of the pellagra-preventive foods prevail. Individual cases and institutional cases can be traced to a particular restriction by choice or necessity in the pellagra-preventive elements of the diet. In the southern States where diets are often seriously deficient in many respects, the incidence of the disease varies with the economic status of individuals and communities.
8. **Methods of control:**
  1. Education in the use of pellagra-preventive articles of diet, particularly liver, lean meats, leafy green vegetables, and milk.
  2. Provision of dried brewer's yeast containing specific pellagra-preventive substance, to be distributed by the health or other public authority among persons economically unable to provide pellagra-preventive substance by usual table food.
  3. Specific therapy: Nicotinic acid and its nicotinamide are specific.

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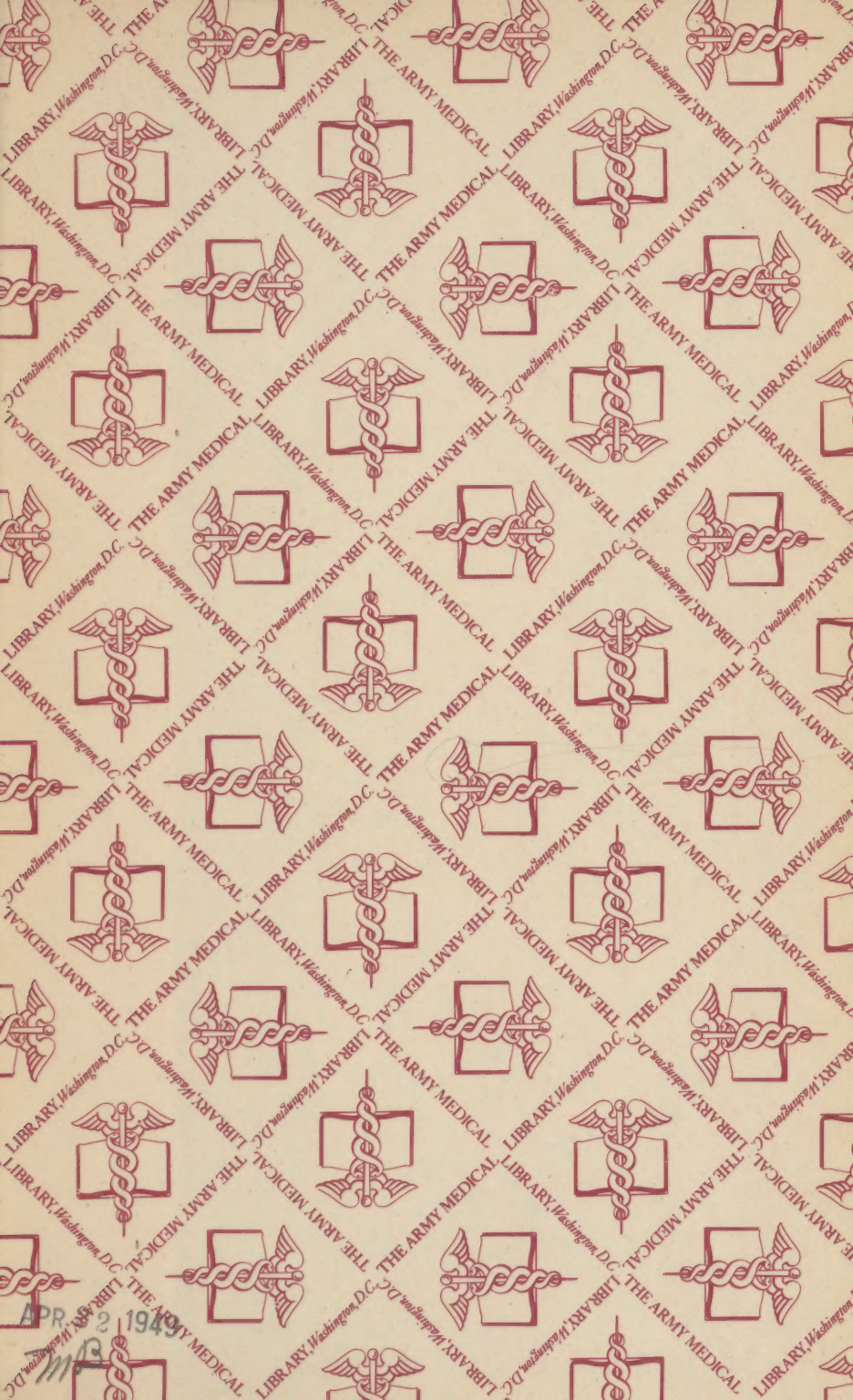
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